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A two-way satisfaction model for sharing economy

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ABSTRACT

Customer satisfaction has been gaining the attention of researchers hoping to develop a model that integrates different constructs to achieve the satisfaction that leads to customer loyalty. Under the sharing economy paradigm, satisfaction is vital to the development of this disruptive business model. Trust between the consumer and the supplier allows its collaboration, and digital platforms connect the consumer with the supplier by creating a framework of trust around transactions. Producer satisfaction is as important as consumer satisfaction; however, it has not had the necessary attention— hence the need and motivation to develop a two-way review system. Based on the American Customer Satisfaction Index, we propose a cause-effect model for the consumer and supplier, connected by the common trust construct. Based on the literature review and choice of relevant publications, we define a conceptual model that will allow the development of a two-way satisfaction model to serve as a contribution to future satisfaction studies in the sharing economy.

KEYWORDS

Sharing economy, Customer satisfaction, Provider Satisfaction, Two-way review system.

1. Introduction

Satisfaction has gained importance in recent years and has been analysed under many perspectives, including, more recently, the sharing economy (SE) paradigm. It is well known that SE has emerged as a promising business concept that allows individuals to share their unused resources, thus improving efficiency in the use of resources. Why do strangers who have never traded with each other, and who may be thousands of kilometres apart, so willingly trust each other? The answer is because they trust in the success of the transaction. Any type of transaction requires a degree of trust between the buyer and seller, often with institutional support such as law or other enforcement mechanisms. Unlike a physical in-store transaction, where buyers can touch and feel the goods they buy, close contact is absent in e-commerce and buyers may not be able to verify their identity. For many people, the rise of e-commerce in general, and the two-way online marketplace in particular, is a surprise. Digital platforms allow the consumer to connect with the provider and develop a bond of trust through transactions, reviews and evaluations that have traditionally been only on the consumer's side in order to define a level of satisfaction. Platforms are now trying to develop a two-way review system that has recently attracted a great deal of academic attention. Therefore, one end of the market needs to feel comfortable trusting the other; for this reason, they need safeguards in place to mitigate the problems caused by asymmetric information. However, the supply-side behaviour of individual providers has not yet received the attention it deserves.

Satisfaction is a term that we often associate with the present day. However, researchers of human and especially consumer behaviour started to conduct studies on customer satisfaction since the 1970s. As a result, several national and international customer satisfaction metrics have been introduced over the past decade. Sweden was the pioneer in establishing a satisfaction barometer, the Swedish Customer Satisfaction Barometer (SCSB) (Fornell, 1992). The basic model for estimating these indices is a structural equation model that links customer satisfaction with its determinants (perceived quality, customer expectations and perceived value) and, in turn, its consequences (customer loyalty and customer complaints). Subsequently, many other countries have adopted indexes using different constructs to obtain a national measurement. Several measures of consumer satisfaction have been proposed in the literature. Although there have been other proposals to measure the impact on customers' satisfaction of loyalty and other constructs related to antecedents such as quality (Marimon & Malbasich, 2019; Mas-

Machuca & Marimon, 2018), having analysed the main satisfaction indices, the American Customer Satisfaction Index (ACSI) is the one that best meets the conditions required by the model to be developed.

The ACSI, developed in 1994, is based on the original specifications of the SCSB model. The main differences between the original SCSB model and the ACSI are the addition of a perceived quality component, separate from perceived value, and the addition of customer expectation metrics. The ACSI is a cause-and-effect model with indicators of factors that lead to satisfaction (customer expectations, perceived quality, and perceived value) on the left side, and satisfaction outcomes (customer complaints and customer retention, including customer retention and price tolerance) on the right.

The aim of this article is to define and develop a two-way satisfaction model between consumer and supplier, based on adapting the ACSI for the customer side through the trust construct, and connecting customer with the supplier in order to achieve overall transaction satisfaction in the context of the SE.

Satisfaction plays a very important role in the SE, which is why we begin this article by defining the SE and describing customer satisfaction from the perspective of economic behaviour. We then describe the evolution of national satisfaction models in terms of the most important constructs in order to present which best fits with the model's objective. Subsequently, we analyse supplier behaviour and motivations in the SE. Finally, we propose the two-way satisfaction model based on adaptation of the ACSI through the trust construct to connect the consumer with the provider.

2. Literature Review

There is an extensive literature related to the SE that is updated year after year. Therefore, to situate this research, we start by reviewing literature on SE definitions, with a special emphasis on satisfaction, analysing not only consumer satisfaction but also provider satisfaction. The review of the literature shows that there is not enough literature defining provider satisfaction, which further justifies the research gap and the motivation to find a thread to connect consumer and supplier satisfaction through an aggregate model of constructs.

2.1. Sharing Economy

The SE is seen as an important factor in the transition towards sustainability. Although the concept is widely used, understanding of the components of the business model differs. It has received a lot of interest from academics, practitioners, policymakers and individuals. The SE focuses on sharing underutilized assets in ways that improve efficiency and sustainability. Sharing is an old phenomenon, while internet-based operating systems and supporting tools and features that take advantage of Web 2.0 technology are a recent phenomenon (Belk, 2014). In this context, Schor and Fitzmaurice (2015) emphasize the importance of technology and digital platforms, including cash and non-altered exchanges, as the basis for a new way of delivering goods and services. Some even see sharing as an opportunity to combine efficiency, consistency and sufficiency strategies and to move these into the mainstream to transform how business is done (Heinrichs, 2013).

The characteristics of the SE are driven by three separate market forces, including societal drivers, economic drivers, and technological drivers (Owyang, 2020). From a social science perspective, three main areas related to participatory economics can be identified: (i) the social approach, which focuses on the changing roles of individuals, more conscious and responsible consumer behaviour, and a growing altruistic mindset. (ii) the economic approach, as the SE has a positive effect on innovation and stimulates competition; and (iii) management theories that point to the emergence of new business models and a new type of approach to providing business and services that can improve traditional industries. The biggest success factor in the SE is the online reputation and feedback system where buyers and sellers can rate each other. Online reputation and feedback systems can build trust among participants. Luca (2012) states that online user-generated reviews have a good reputation among customers and are an essential part of the decision-making process. With the rating and reputation mechanism system, participation by a stranger is less risky (Tadelis, 2016).

2.1.1 Sharing Economy Definition

The term 'sharing economy' refers to sharing resources in an efficient way (Agarwal & Steinmetz, 2019). In academic literature, the SE is often referred to as an umbrella term for a variety of non-ownership forms of consumption activities, such as collaborative consumption (Botsman & Rogers, 2010). Researchers have examined the concept of the SE from various perspectives, including motivation to participate (Balck & Cracau, 2015;

Hamari, Sjöklint, & Ukkonen, 2016; Hawlitschek, Teubner, & Weinhardt, 2016) and sustainability (Heinrichs & Grunenberg, 2012).

Botsman and Rogers (2010) define the SE as an economic model for sharing underutilized assets for monetary or non-monetary benefits. Focusing on Web 2.0, the SE is also defined as "the peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community bases online services" (Hamari et al., 2016). Furthermore, there have been some recent attempts to review the literature on the SE using multi-level perspectives (Cheng, 2016; Dillahunt et al., 2017; Gorog, 2016; ter Huurne et al., 2017).

The definitions focus on the core concept of the SE, a concept that in recent years is being adapted according to consumer, provider and technology behaviour.

2.1.2 Satisfaction of Sharing Economy

As a disruptive model of consumption, SE is revolutionizing the way consumers use goods and services. Some researchers point out that SE is an appealing alternative for consumers due to its economic benefits, considered important after the global economic crisis (Eckhardt, 2012; Tussyadiah, 2016). However, Botsman and Rogers (2010) argue that SE is driven by motivations beyond cost savings, such as environmental and social factors. For some time, it has become increasingly clear to us how exchange-based business models are making their way into national economies, but what is the reason or motivation for consumers to start collaborative consumer programmes? And what are the factors that motivate users to engage in collaborative consumption again and again? Knowing the driving forces behind the SE will help providers take advantage of unused resources by changing consumption habits in the interest of greater efficiency and sustainability.

With two quantitative studies, Möhlmann (2015) developed and examined a framework of factors determining the selection of a particular provider. The results show that satisfaction and the probability of re-choosing the participation option are mainly explained by perceived quality. Although utility, trust, cost savings and familiarity are essential, along with quality service and belonging to the community.

2.2. Customer Satisfaction Based on Economic Behaviour

Customer satisfaction research has developed around two different types of evaluation: transaction-specific satisfaction and cumulative satisfaction (Johnson, Anderson, &

Fornell, 1995). The original interest in marketing and consumer research was in transaction-specific satisfaction, or a customer's experience with a product or service encounter (Yi, 1991). Other transaction-specific research has focused on the relationship between perceived quality and satisfaction (de Ruyter, Bloemer, & Peeters, 1997) and the role of emotions in satisfaction evaluation (Oliver, 1993).

The approach to satisfaction based on economic behaviour that has been developed and accepted during the last decade is known as cumulative satisfaction or total satisfaction. This approach defines satisfaction as a customer's overall experience to date with a product or service provider (Johnson & Fornell, 1991). This definition is consistent with those in both economic psychology (Wärneryd, 1988) and welfare economics (Simon, 1974), defining customer satisfaction as synonymous with consumption utility. An important advantage of the cumulative satisfaction construct over a more transaction-specific view is that it is better able to predict subsequent behaviours and economic performance (Fornell et al., 1996; Johnson et al., 1995). This is because customers make reviews and usage decisions based on their buying and consuming experiences to date, not just a particular transaction or episode (Johnson et al., 2001b).

2.2.1 Evolution of National Satisfaction Index Models

The choice of index for the development of the model is based on the constructs that define it. The main satisfaction indices over the years are presented below.

Established in 1989, the Swedish Customer Satisfaction Barometer (SCSB) was the first truly national customer satisfaction measure for domestically purchased and consumed products and services (Fornell, 1992). The American Customer Satisfaction Index (ACSI) was introduced in the autumn of 1994 (Fornell et al., 1996), while the Norwegian Customer Satisfaction Barometer (NCSB) (Andreassen & Lervik, 1999; Andreassen & Lindestad, 1998b) was introduced in 1996.

Four perspectives are used to determine the most influential satisfaction index models:

1) Latent and manifest variables in customer satisfaction index (CSI) models.
2) The CSI model is designed by a series of latent and manifest variables (Yang & Tian, 2004) and its reliability depends on the choice of variables and the definition of relationships between variables.
3) Exogenous and endogenous variables in CSI models.
4) Relationships between variables.

The original SCSB. The original SCSB model, developed by Fornell in 1992, contains two main precursors to satisfaction: the customer's expectations of their performance experience with the product or service, and the customer's perception of that performance. More precisely, perceived performance is equivalent to the perceived value or the level of quality received in relation to the price(s) paid. Quality per dollar or value is a common denominator that consumers use to compare brands and categories (Emery, 1969). The basic expectation is that as the perceived value increases, satisfaction also increases as a direct relationship between perceived value and satisfaction.

The SCSB responded to Hirchsman’s (1970) exit-voice-loyalty (EVL) theory. The theory describes situations in which a customer becomes dissatisfied with the products or services offered by the organization. The organization discovers its inability to provide satisfaction through two feedback mechanisms—exit and voice. The customer continues to buy or stops buying from the company, or expresses dissatisfaction with the company for a refund. An increase in satisfaction should decrease the incidence of complaints. Increased satisfaction should also increase customer loyalty (Bloemer & Kasper, 1995), defined as the psychological readiness of the customer to repurchase a particular product or from a particular service provider. Loyalty is the last dependent variable in the model because of its value as an indicator of actual customer loyalty and subsequent profitability.

Finally, the original SCSB includes a relationship between complaint behaviour and customer loyalty. Although no prediction is made regarding this relationship, the direction and size of the relationship provides some diagnostic information as to the efficacy of a firm's customer service and complaint handling systems (Fornell, 1992). When the relationship is positive, the business can successfully convert disgruntled customers into loyal customers. When negative, customer complaints tend to surface.

The ACSI. The ACSI model was developed in 1994 and has similarities to the original SCSB model. The ACSI model was estimated for each of the approximately 200 firms in a survey based on a random sample of nearly 250 clients in each firm. A total of 15 survey questions were used to run the six concepts of the model. All survey questions are rated on a scale of 1 to 10, with the exception of price tolerance and complaint behaviour, which is defined as a dichotomous variable (the customer has either complained or not). In all cases, the scaling variables are identified as reflective indicators of the latent constructs of the model. The main difference between the original SCSB model and the ACSI model is the addition of perceived quality as a component, as opposed to perceived value, adding customer expectation metrics by removing the perceived quality structure.

Quality professionals (Deming, 1981; Juran & Godfrey, 1998) have identified two main components of a quality experience: the degree to which a product or service meets key customer requirements (customizability) and the reliability of those requirements (reliability). Requiring customers to rate subjective quality, quality of reliability, and overall quality allows the ACSI model to define a quality structure distinct from the perceived value. This model represented a new customer-based measurement system for evaluating firms' performance (Fornell et al., 1996).

The ACSI model conveys that both perceived value and perceived quality have a direct impact on consumer satisfaction—i.e. the higher the value and perceived quality, the higher the satisfaction. As quality is a component of value, the model also links quality directly to value (Johnson et al., 2001b).

There are two customer loyalty metrics in the ACSI model. The first assesses the possibility of acquisition. The second metric is built from two survey evaluations: the percentage by which the company can raise prices before a customer firmly decides not to buy from that business next time, and the percentage by which sales companies have to reduce their operation(s) before a customer definitely chooses that company again next time.

The ACSI is designed to be representative of the nation's economy as a whole (Fornell et al., 1996).

NCSB model. The first NCSB model was similar to the original American model except that it included the company's image and its relationship with customer satisfaction and retention. Key to the company's perceived image are organization-related associations retained in the customer's memory. These correlations resemble patterns in cognitive psychology (Bransford & Franks, 1971; Bransford & Johnson, 1972). On the other hand Hill, Fishbein, and Ajzen (1977) contended that attitudes are functionally related to behavioural intentions, resulting in predicted behaviour. Corporate image is a type of attitude and should be updated as schemas which include changes in customer satisfaction. In addition, corporate image should affect behavioural intentions such as loyalty (Johnson et al., 2001b). Selnes (1993) documented the effects on brand reputation (an important part of a company's public image) in a study of four companies from different industries.

Finally, two studies relating to the influence of company image on customer intent (Andreassen & Lindestad 1998a, 1998b) found a positive association between the constructs. As a consequence, corporate image should be modelled as an outcome rather than a driver of satisfaction, because it is recreated following satisfaction exposition. In addition, the effect of satisfaction on corporate image reflects both the degree to which customers' purchase and consumption enhance a product's or service provider's image and the consistency of customers' experiences over time.

Keeping marketing evolving from transaction-oriented relationships to relationships between service providers, the NCSB model has been extended over time to include a relational interaction construct. This construct has evolved to focus on both the emotional and commitment elements of engagement. Whereas the emotional component is the 'hottest' aspect of a relationship, such as the cost of change, commitment constructs are designed as a mediator of the effect of satisfaction on loyalty (behavioural intent).

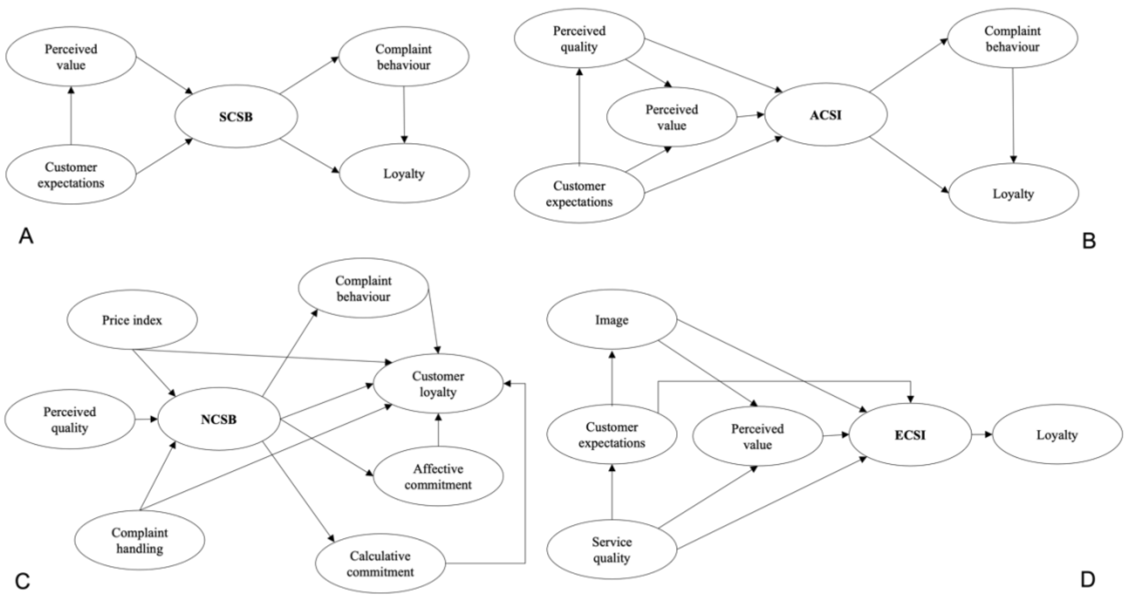
The ECSI model. The ECSI is another type of ACSI model. Customer expectations, perceived quality, perceived value, customer satisfaction and loyalty are designed in the same way as in the ACSI. The distinction between service quality and product quality in a small group of ACSI industries is standard in the ECSI. The customer loyalty construct is also somewhat different.

For the ECSI, the loyalty construct includes retention, the likelihood of a business or brand being recommended, and whether the number of potential buying customers will increase. There are two other basic differences between the ACSI and ECSI models. Firstly, the ECSI model does not include the effect of complaint behaviour as a result of satisfaction. Secondly, in keeping with the original NCSB, the ECSI model incorporates the corporate image as a latent variant of the model. Corporate image in the ECSI has various influences on customer expectations, satisfaction and loyalty (Johnson et al., 2001a).

Figure 1 shows the four models. All have the satisfaction construct in the middle, and each one shows antecedents (on the left) and results (on the right). The common antecedents are customer expectations, perceived quality and perceived value, whereas the main result is loyalty. Table 1 shows the same comparison and distinguishes the particular constructs for each index.

Model	Description	Year	Antecedents	Consequences
SCSB	Swedish Customer Satisfaction Barometer	1989	Perceived value Customer expectations	Customer complaints Customer loyalty
ACSI	American Customer Satisfaction Index	1994	Perceived value Customer expectations Perceived quality	Customer complaints Customer loyalty
NCSB	Norwegian Customer Satisfaction Barometer	1998	Price index Perceived quality Complaint handling	Customer loyalty Image Affective commitment Calculative commitment
ECSI	European Customer Satisfaction Index	2000	Perceived value Customer expectations Service quality Corporate image	Customer loyalty

Table 1. Consumer satisfaction index comparison table.



A. Swedish Customer Satisfaction Barometer (SCSB)
B. American Customer Satisfaction Index (ACSI)
C. Norwegian Customer Satisfaction Barometer (NCSB)
D. European Customer Satisfaction Index (ECSI)

Figure 1. Consumer satisfaction index comparison.

2.3. Provider Motivation

The SE has evolved into a promising business concept that allows individuals to share their unused resources, thus improving the efficiency of resource reuse for commerce. In this economic model, transactions between providers and consumers take place on a specific platform, so it is the responsibility of that platform to protect both parties.

Fuelled by the use of internet-facilitated sharing systems and the pursuit of sustainable development, the SE as a social-economic model has become a pervasive novel business model (Chang & Wang, 2018). Traditionally, platforms only provide a one-way review system where customers can find server ratings. Recently, SE platforms have begun to implement a two-way review system. The implementation of these systems creates a sense of equality between guests and hosts; however, it also serves as a way for platforms to mitigate potential risks and protect their users. The two-way classification system is not new to the SE. It was first approved by eBay and Amazon in 2002 (Jøsang, Ismail, & Boyd, 2007) without success, and they removed it. The fact that most participating economies choose to re-implement this system shows how important it is for platforms. Despite the importance of two-way review systems, studies on the effects of these systems are still lacking.

Against the numerous potentials of the SE, inadequate acceptance and adoption, and the lack of resources such as customer base, money, trusted branding, etc., have prevented the SE model from scaling up its economy and becoming mainstream (Piscicelli, Cooper, & Fisher, 2015). Evidence suggests that while many providers accept the SE model, some are loath to continue participating in this economic model because of a high degree of social distance and product involvement, economic and political risks (Malazizi, Alipour, & Olya, 2018), and privacy concerns (Lutz et al., 2018).

As the definition implies, besides the digital nature and the pro-social characteristic of pure sharing, the SE is considered pseudo-sharing due to the compensation aspect (Belk, 2014). Within the SE, the traditional business model of companies owning and consumers using is disrupted (McArthur, 2015). Peers are granted opportunities to offer and to obtain goods or services from each other through market-mediated platforms. Individuals act as users or providers (Barnes & Mattsson, 2016; McArthur, 2015). For providers, the SE offers economic benefits by providing them with opportunities to act as micro-entrepreneurs, reducing the burden of ownership and sharing the fixed cost of holding (Bucher, Fieseler, & Lutz, 2016). For the providers and users, the SE brings more opportunities for them to interact and connect with local communities (Barnes & Mattsson 2016; Bucher et al., 2016).

2.3.1 Providers in the Sharing Economy: Motivations

Reasons for participation in a sharing economy depend on context and role, and related research is still in its infancy. Insights into motivations would be instrumental in developing a better understanding of the underexplored decision-making processes of users (Piscicelli, Cooper, & Fisher, 2015; Tussyadiah, 2016).

Previous research has identified a large number of drivers and has shown that positive engagement is largely shaped by three premises: sustainability, social-hedonic value, and economic benefits (Bucher et al., 2016; Hamari et al., 2016). Bucher et al. (2016) mentioned that social, ethical, and monetary motives for pleasure are essential in explaining suppliers' attitudes towards engagement. In contrast, needs-oriented research suggests that the use of shared choices is determined by self-interest and utilitarianism. Lawson (2016) found that economic benefits are the most common motive for consumers to access products through social networks for short-term rental. Cost-saving and utility are the most important antecedents of satisfaction (Möhlmann, 2015).

Economic benefits. The main motivator for participating in the SE is undoubtedly the economic factor, when costs are minimized and benefits are maximized (Hennig-Thurau, Henning, & Sattler, 2007; Sinha & Mandel, 2008). The SE allows providers to be micro-entrepreneurs, gives them extra income, and allows them to share the fixed cost of their shareable property with others. Monetary value is the main determinant of attitudes and intentions. Hamari (2016) verifies that economic benefits directly influence the intention to participate in this economy.

Social-hedonic value. Previous research identified community membership as a determinant of consumption behaviour (Närvänen, Kartastenpää, & Kuusela, 2013). Belonging to society is manifested in the desire to be part of a group of like-minded people (Albinsson & Yasanthi Perera, 2012; Belk, 2010).

The opportunity to share can be the start of generating new connections, which is key to collaborative economic activities. Specifically, the positive effect of the desire to make friends on the intention to share accommodations is verified by Kim et al. (2018). Social interactional benefits also influence consumer decisions (Hemetsberger, 2002), especially in contexts involving high social interaction such as social media and social networking sites (Jiang, Heng, & Choi, 2013; Krasnova et al., 2010).

Sustainability. Driven by a growing awareness of environmental pressures, individuals tend to use resources more efficiently. Individual attitudes towards sustainability-oriented practices are driven by environmental benefits values (Black & Cherrier, 2010; Guiot & Roux, 2010). Over the last decade, environmental awareness has gained momentum and it has been confirmed that environmentally conscious people tend to behave in an environmentally friendly way (Hartmann & Apaolaza-Ibáñez, 2012), in behaviours that are as much about giving as they are about receiving (Martin & Upham, 2016). In general, shared activities can be considered to be environmentally advantageous compared to non-shared ones, as sharing can optimize the use of resources in a more efficient way (Bowen, Bansal, & Slawinski, 2018; Grybaitė & Stankevičienė, 2016; Lawson et al., 2016).
Participation in the SE has been regarded as a highly ecological sustainable practice (Botsman & Rogers, 2010; Eckhardt, 2012; Prothero et al., 2011).

Trust. Although many definitions and performance measures are used for trust, there is a widely accepted concept that "reliability occurs when one party trusts the reliability and immediacy of an exchange partner" (Morgan & Hunt, 1994).
In the context of SE, trust is the determining factor for transactions to take place between peer providers and the consumer. Previous research on information systems and recent e-commerce has focused on the risks and concerns related to the exchange of personal information on online platforms. In the information system and marketing research, continued usage has been found to play an important role in the development and sustainability of businesses and online platforms: it determines the success of the business (Bhattacherjee, 2001), maintains competitiveness (Zhang, Gu, & Jahromi, 2019) and increases profitability (Abbas & Hamdy, 2015). The SE needs to ensure that routine checks and balances, such as identity verification and secure payment processing, are in place. There is also less tangible trust content that has more to do with how users or potential users perceive the business.
Research has provided evidence of the positive effect of trust (Kim et al., 2018; Liang, Choi, & Joppe, 2018) and the negative effect of lack of trust (So, Oh, & Min, 2018; Tussyadiah, 2016) on attitudes and the intention to be part of the SE.

3. Model Estimation

Until the advent of the online market, economists had a hard time studying how real-world reputation and feedback systems worked. Much of the literature on the economics of reputation has been confined to theoretical papers detailing the risks of hidden information and patterns of hidden action, and investigating the conditions under which the reputation mechanism can overcome the asymmetric information problems described above. In general, it is difficult to find data that speak directly about the role that reputation plays in facilitating market transactions.

3.1. Development of a Two-Way Satisfaction Model

Satisfaction models must cope with some limitations. The models include a network of causal relationships and should be estimated accordingly, predicting a pattern of relationships and effects within a nomological network (Bagozzi, 1980).The models also contain latent or unobservable psychological variables (e.g. perceived quality, satisfaction, loyalty). As described earlier, these variables can only be measured indirectly using a particular proxy. Ultimately, it is necessary to be able to run performance on latent variables to provide benchmarks (Johnson et al., 2001a).

Although testing of competing or alternative approaches is relatively common in transaction-specific research (Yi, 1991), there are very few typical tests of cumulative satisfaction. Cumulative satisfaction modelling involves balancing two goals. The first is to provide a descriptive understanding of relationships around satisfaction, the second the ability to predict key business performance parameters, including satisfaction and loyalty. The importance of building trust in an online platform and transactions can be challenging, but a good track record of responsible users on both the consumer and supplier side will ensure the platform's success. One of the main ways to deal with this when a user first accesses the platform is through identity verification—i.e. verifying that the user is who they claim to be, whether through background checks, video interviews, or even facial recognition technology. Many companies in the SE use social media accounts to verify their identities. The ability to trace digital fingerprints means that users are easier to identify and account for online, which makes transactions more secure than someone entering a physical store, because users create their own profiles.

3.1.1 Consumer Perspective

Peer (supplier) trust describes whether the supplier has the skills and competencies needed to carry out the closing process and is considered a valuable business partner (Pavlou & Fygenson, 2006).

According to Gefen (2002), trust in a platform is also based on trust in the ability, integrity, and benevolence of a website or resource. Unlike B2C, platform operators in C2C marketplaces primarily act as peer-to-peer intermediaries. Efficiency here can refer to whether the platform is successful in finding and connecting business partners—i.e. its adoption. Safe and reliable data management is another important aspect. Conversely, perceptions of a platform's integrity and generosity can correlate with the price it charges users, user-friendly design, quantity of spam, third party access, etc. (Gefen, 2002).

Privacy computing theory states that the privacy risks of customer behaviour are measured by its advantages, whereby trust in the platform operator is positively correlated with intent (Dinev & Hart, 2006; Krasnova et al., 2010). Additionally, Gefen (2002) found that trust in the platform's ability to influence consumers' intent to shop positively and trust in integrity and benevolence affect purchase intent.

3.1.2 Supplier Perspective

Since most C2C platforms operate on the basis of a mutual agreement to enable transactions, the supplier’s trust in the consumer is also important. Supplier concern about harm due to hidden consumer actions is a major barrier to participation (Weber, 2014). However, without the supplier's confidence in the integrity and benevolence of the peer-to-peer consumer, agreement appears unlikely. From the supplier's point of view, mechanisms to internalize the risk of resource damage—for example, through standardized coverage (Weber, 2014) and transparent benefit-sharing mechanisms—can increase trust in a given platform. Furthermore, communication protocols that facilitate vendor data security so that privacy is not unnecessarily threatened are useful in terms of enhancing trust in the platform.

The model presented arises from the ACSI on the customer side, connected to the supplier through the shared trust construct (Figure 2). When it comes to trust in any business transaction, it is essential to be aware of its many aspects: hence the importance of highlighting the trust construct in the model.

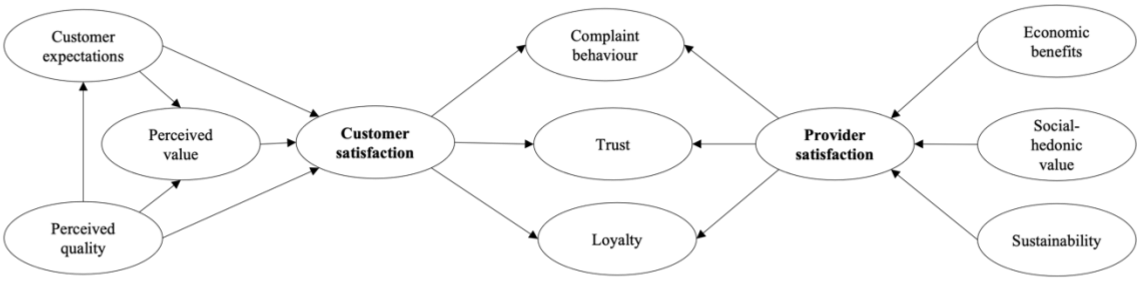


Figure 2. Two-way satisfaction model.

Employees play an important role in improving the quality of service, thus meeting the growing needs of customers. Job satisfaction, according to Hoppock (1935), is a combination of psychological and physiological conditions and work environment. It affects employees' productivity. In a business strategy, the customer relationship orientation is fundamental (Webster & Wind, 1972), and customer satisfaction and loyalty will be improved if employees apply the customer-oriented process well.

Financial interest has been shown to be the primary driver of a user's behavioural intentions. In the context of the SE, service providers are the clients of the platform and demand protection just as much as the users. Information security is a primary concern of clients and an important driver of information disclosure.

4. Findings and Discussion

This study develops a new conceptual framework that links customer satisfaction with shareholder value and introduces the concept of trust that links the two key concepts. The relationship between customer satisfaction and shareholder value is likely positive.

The association between customer satisfaction and shareholder value varies widely from industry to industry and from company to company. Loyal and satisfied customers are an income-generating asset for a company that is costly to develop and maintain. Such an asset should feature in assessments of the company's future financial health. If every company provided a standardized customer satisfaction index as part of its financial statement, the financial markets would be better informed.

The role of a feedback and reputation system is to enhance trust and loyalty in online markets in order to reduce the friction caused by asymmetric information and thus increase the efficiency of the markets. The rise and penetration of online markets into almost every home is due to a certain degree of success of these feedback and reputation systems.

In summary, the review presented suggests the strongest support yet for the positive association between customer satisfaction and shareholder value.

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Why is it worth studying economics?

A course proposal for non-economics students

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ABSTRACT

At an early life stage, students must choose a degree, a crucial decision that will shape their professional life. Whatever the studies chosen, these are very topic specific, and the current higher education system does not have the mechanisms to make this choice less focused, allowing students to open their minds to other areas of knowledge. This situation is particularly critical for students who do not choose a major in a business-related discipline. Basic economic knowledge is paramount as it provides individuals with a better understanding of human behavior and the rules of the marketplace. Knowledge of its foundations is valuable for daily life (e.g. making better choices, allocating resources more effectively, and understanding policy options). However, in some countries, economics is compulsory at neither high school nor university; and thus, it is usually overlooked. Focusing on Spain's particular context, this study underlines the key reasons for including economics in non-economic university programs. A survey gathering students' perceptions of the fundamentals of economics and their level of understanding is presented and discussed. Building on the literature and the survey's results, we identify three core blocks that should be taught. A panel of experts is consulted to evaluate our proposal.

KEYWORDS

Economics, Non-economics, Higher education, Entrepreneurship.

1. Introduction

We live in a society in which buying online, paying with a debit card, and applying for a mortgage are recurrent actions. Our world is globalized, and companies that leverage markets are constantly vigilant regarding new trends—even before the demand exists (Engel et al., 2018)—and compete internationally. Entrepreneurs also play a key role, being responsible for the creation of millions of jobs per year—in 2021 they created 2,991,172 jobs in the US (Statista, 2022). Nevertheless, our economy is characterized by economic cycles that affect the flow of local revenues and the demand for services. For instance, in 2008, a major financial crisis hit the world economy, and, at a time when the global economy was still healing from its effects, in the first half of 2020, we again witnessed the fragility of our global systems due to the COVID-19 pandemic.

Global crises, as well as how we navigate daily life, have made economics-related issues common water-cooler conversation topics (Mearman et al., 2014). A quick look at almost any newspaper also reveals how closely economics is linked to the real world and the prominent role that it plays in our lives (Atkinson & Johns, 2001). In this scenario, it is reasonable to assume the relevance of contemporary economics. Knowing its fundamentals can help us to understand how the world works and successfully survive in it (García del Barrio, 2017; González Medina, 2011).

However, there is sound evidence that many college students and citizens with a tertiary education diploma are illiterate in economics (De Beckker et al., 2019). There are several explanations for this situation, one of the most plausible ones being the current education system; in many countries, economics is not considered as compulsory at the high school or the university level, except when students choose economics as their main discipline. Even when it is taught, its importance in solving social issues is neglected. Does this mean that a philologist will not ask for a mortgage or that a dentist will not have to sign a contract for a credit card? Cannot a scientist (e.g., physicist) start a new venture that needs funding? Sooner or later, at some point in our life, to a greater or lesser extent, we will all have to deal with economics.

Contrary to the general wisdom that considers economics as a path to run a business or work on finance, economics embraces much more than this. As students grow and learn, they need to develop economic attitudes and opinions that will shape and influence their thoughts and actions over a lifetime (Wyk, 2012). The Cambridge Dictionary defines it as a social science concerned with "the study of the way in which trade, industry, and money are organized." Because it is a social science, it involves people and their choices; therefore, economics can help us to understand better how people interact, use resources, respond to incentives, and make trade-offs. As highlighted in a recent post in The Conversation, "we need economic literacy to remain politically and socially informed" (Evans, 2018).

However, despite its relevance, students tend to underestimate the relevance of economics to everyday life. The way in which economics is typically presented—too complex and theoretical instead of being connected to real-world topics—is probably not the most appealing way to convince students about its relevance. Linked to this aspect is the misconception that economics is a hard subject, with a strong mathematical background (Gil-Doménech & Berbegal-Mirabent, 2020). While it is true that economics uses mathematical formulations to model reality, these mathematical developments are loosely connected with only a few economic topics, the field actually being much broader. Lastly, there is considerable uncertainty and ambiguity in the career path of a graduate in economics, preventing students from considering a career in this field.

To reverse this situation, a wide range of initiatives have emerged at different education levels aiming at increasing the economic literacy of the population. One example includes the Financial Education Program in Schools in Catalonia (EFEC, https://blog.efec.cat/que-es-efec/), which emerged in 2012 following the recommendations of OECD to provide citizens with better economic skills that allow them to manage their savings, and avoid episodes of over-indebtedness and financial exclusion. This program is targeted to all students attending secondary education in Catalonia, and it is taught by volunteers who are professionals in the economic, financial, tax and insurance sectors. Another example is the charity ecnmy.org, founded in 2016 in the UK, which through volunteerism, run free economics courses and transforms the way that economics is communicated across media, politicians and civil society, creating accessible ways to have conversations about the economy.

Within this context, universities are also called to be active players. Universities are the last stage of education where knowledge and skills are gained at a high level. They are responsible for preparing students to be competent and successful before they initiate occupational life. Accordingly, they should also commit to the development of activities aimed at reimagining economics as a conversation every student can be part of. For instance, without making big changes, universities could include, within their offering, elective courses covering the basics of economics targeting non-economics students. This can be done at low cost, as most undergraduate (bachelor) degrees require the completion of some elective courses that students have to choose from a large and varied portfolio. These courses should be designed in such ways that highlight the relevance of economics for solving daily problems, reducing the barriers to participate in public debates and helping students to make reasonably well-informed judgements about the state of the economy.

Rooted in this context, the purpose of this research is to explore how universities, by means of elective courses can empower undergraduate students with the fundamentals of economics knowledge. To this end, the final outcome of this study is a suggested course, structured in three modules—introduction to economics, entrepreneurship, and economics for daily life—that is expected to increase economic literacy among future graduates and help them to understand better the economic landscape, policies, and decisions that affect their lives. To do this so, we use a mixed-method approach. First, based on a literature review, we uncover the reasons why is it worth studying economics. Second, by combining qualitative and quantitative information obtained from a panel of experts and an ad hoc survey conducted with students we capture aspects of the reality of the teaching and learning of economics.

This study contributes to the limited research base on the teaching and learning of economics in higher education in three main ways. First, scholarly publications dealing with the relevance of economics as a discipline have mainly been reduced to discussing the underlying reasons for students' choices to study (or not) economics (Bleemer et al., 2022; Livermore & Major, 2020), why economics should matter and students' perceptions of it (Mearman et al., 2014), and the adoption of innovative teaching strategies to engage students in the study of economics (Brunnermeier, 2017; Lagoa-Varela et al., 2018). Besides the lack of a systematic review of the main outcomes of these discussions, what can be concluded after a comprehensive review of the literature is that academics seem to have overlooked how to confront non-economics students with the study of economics. Second, this study offers a detailed analysis of the reasons why economics is relevant to everyone and which aspects of it should be reinforced at higher education level. Creating an economically curious, confident and capable society is a mandate from the OECD (OECD, 2005). It is therefore necessary to explore the role of economics in society and communicate the story of why a change is needed to the new generations.

With this goal in mind, the remaining of the paper is organized as follows. Section 2 provides the theoretical background for the study. Section 3 describes de research design, while the results together with the analysis are presented in Section 4. The paper concludes with the discussion and the implications in Section 5.

2. Literature Review

Universities are the perfect place to gain deep knowledge. At the age of 17 or 18, students have to choose the degree in which they want to enroll. This decision is critical as they will have to spend at least the next 3 or 4 years of their life studying what they feel is their preference at this early stage of life. On a related note, whatever the subjects chosen, they tend to be much focused, and the current higher education system is not equipped with the proper mechanisms to make this choice less focused and allow students to open their minds to other relevant areas of knowledge that will be highly useful in both their personal and their professional life.

Economic literacy helps individuals in making rational economic decisions; therefore, studying economics should be as important as reading or writing (Varum et al., 2014; Jacobson, 2012). A quick fact: economics is one of the few subjects for which there is a Nobel Prize.

In the paragraphs that follow we elaborate on the key reasons why students, whatever their studies, should have a basic background in economics. The support for these arguments can be found in the literature. We performed an exhaustive review of both scholarly documents and reports in the grey literature. Specifically, we looked at Web of Science and Scopus databases, searching for articles that deal with at least one of the following topics: economics literacy, teaching economics to non-economists and interest in studying economics. We triangulated the information obtained with the content of official reports from the OECD and the World Bank, evaluating national strategies for increasing the financial literacy of the population and the role of education. From this review it can be concluded that there is a myriad of reasons why students, whatever their studies, should have a basic background in economics given its practical application in everyday life. We have synthesized them in four main blocks:

Economics helps to develop entrepreneurial skills. The importance of startups when it comes to explaining economic growth and employment opportunities is undeniable (Kane, 2010). Economics gives students an understanding of how markets work, how to identify hidden costs, and how to collect and analyze information for decision making (Contreras-Barraza et al., 2021; Wardana et al., 2021). These skills are highly valuable for people who want to start their own company, particularly for conducting market research and investigating the feasibility of their ideas. Among the key reasons for business failures are poor value propositions, inadequate cash flow, and poor management practices. Classes in economics help students to become aware of these problems and how to overcome and prevent them. Likewise, in economics classes, students learn how to read balance sheets and income statements and how to use financial ratios that reveal the financial health of a company.

Learning from the past. Economies evolve in patterns. Recessions have come and gone throughout history. According to the Keynesian approach, supply and demand go hand in hand, and that causes the economy to evolve in clear patterns that are repeated over time. Although economics is not an exact science, new technologies (e.g., big data and machine learning) can help us to improve forecasts and performance monitoring. However, to achieve this, we need to know our history. The study of the past—economic history—can help to narrow the scope of the “unknown unknowns” by casting the net wider (Skidelsy, 2009). Classical theories on economic thought still prevail. To illustrate this, we can take the magnum opus “The Wealth of Nations” of Adam Smith (2012) and his explanation of the concepts of scarcity and value: “The things which have the greatest value in use have frequently little or no value in exchange; and, on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water: but it will purchase scarce or any thing: scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it” (pp. 44-45).

Economics can help us to make better choices. Economics is about determining whether one product is better than another, whether one policy fits better than another one, or which is the most suitable mortgage or loan. All these decisions cannot be taken arbitrarily. Unconsciously, when making daily choices, we apply the concepts of competitive advantage and opportunity cost. Economy is everywhere; no one can organize his/her life without taking into account the principles of this science. Economics is projected in both our personal and our professional lives. For the decision-making process to be accurate, it is essential to base these decisions on knowledge rather than relying on mere intuition. Just for illustrative purposes, in Gregory Mankiw's book on the Principles of Economics (2000; pp. 3-6, 270-272), he brilliantly exemplifies how the concept of opportunity costs can be applied to day-to-day decision-making processes: "The notion of opportunity cost helps explain why star athletes often do not graduate from college. The cost of going to school includes the millions of dollars they could earn as professional athletes. If Kobe Bryant had decided to attend college for four years after high school instead of signing with the Lakers, his implicit cost would have been over $10 million, the salary he earned in his first four years as a Laker." Clearly, knowing the basics of economic principles, laws, and concepts can help students to take a better perspective on the world that surrounds them and make more informed decisions (i.e. which car to buy, which destination to choose for a family trip, etc.).

Understanding the changes that modern economies are experiencing. Contemporary economies evolve fast and grow in very different ways from classical economies. Three key factors have radically changed and are shaping the new economic landscape: pensions, the labor market, and financial markets. Another big challenge that modern economies face is that of globalization, linked with the information technology revolution, which is breaking down the barriers between countries. The Internet has driven the marginal transmission costs of voice and data to nearly zero, reducing the costs of trading goods and expanding investment opportunities almost everywhere (Haskel et al., 2012). Future professionals need to understand why the financial markets operate as they do. In this regard, there is an urgent call for universities to update their courses and include modules that deal with the evolution of economics as it is crucial to understand where we are and how we arrived here (Masciandaro, 2019).

3. Research design

3.1. Geographical scope

According to the 2018 edition of the OECD's Programme for International Student Assessment (PISA), around one in four students in the 20 countries that took part in the study and one in seven in the 13 OECD countries face difficulties when confronted with financial problems (money matters and personal finance), being unable to make simple decisions about everyday spending, such as dealing with bank accounts and debit cards, understanding interest rates on a loan, interpreting a bank statement, or choosing between a variety of mobile phone plans. These numbers corroborate the assertion that students' ability to face real-life situations involving financial issues and decisions is very limited. Estonia is the country with the highest average score, followed by Finland, the participating Canadian provinces, Poland, and Australia. The results of the PISA report (2018) also signal that socio-economically advantaged students are more likely to perform better than low-family-income students. This situation is worrisome because the gap between students with more economic facility and those with less is accentuated. These numbers reaffirm the need for the educational system to reverse this situation, compensate for this lack of opportunities, and guarantee a minimum level of financial literacy for all students.

For the purpose of this paper, we focus on the case of Spain. To promote financial education in schools, the National Commission Stock Market (CNMV in Spanish) and the Bank of Spain signed a collaboration agreement in 2009 with the Ministry of Education, Culture, and Sport. Under this agreement, a financial education program aimed at students between 14 and 17 years old (before accessing university) was designed. About 500 centers from all over the Spanish territory enroll in the program each year, yet these efforts seem to be insufficient. The average performance in financial literacy of 15-year-olds according to the PISA 2018 report was 492 points, lagging behind the average performance in OECD countries (505 points). As it is highlighted in the OECD (2018) report for Spain, the percentage of students who have a bank account and/or a prepaid debit card is one of the lowest among the countries participating in this assessment; on the contrary, the percentage of students holding a bank account is relatively high compared with that in the other countries. Improving the financial literacy of students is crucial. Therefore, to fight against high levels of unemployment, it is imperative to train students in the fundamentals of entrepreneurship, self-employment, and building a company.

3.2. Research methods

The ultimate purpose of this study was to produce a proposal for a hypothetical course on economics targeting students enrolled in non-economics-related disciplines that covers the fundamentals of economics. To create a strong proposal, different sources of information were consulted, embracing two potential views: the experts (professors in economics) and the recipients of education (the students). Once all the information had been collected, processed, and analyzed, a course proposal was drafted, discussed, and validated with the panel of experts.

Experts' opinions. We created a panel of experts made up of professors in the field of economics. To be part of this panel, experts should met the following requirements: 1) teach economics to non-economics students, 2) have at least 10 years of teaching experience, 3) achieved outstanding evaluations in teaching assessments, 4) be currently teaching in the Spanish higher education system, and 5) have worked at least at two different universities in order to bring multiple insights from different contexts into the conversation. Table 1 shows the main descriptives for the five experts that agreed to participate in the study. The rationale for this panel was to allow experts to express their understanding of their perceived reality of teaching economics, the topics they address in their courses and the challenges they typically face.

ID	Gender	Background	Current teaching
RMS	Female	PhD and MSc in Economics, Finance, and Management	"Economics" to students in Audiovisual Communication (4th year) and Advertising and Public Relations (2nd year). Both courses are compulsory.
MBP	Male	MSc in Business Administration and PhD in Economics	"Introduction to Economics" to 2nd-year students enrolled in Humanities and Cultural Studies. The course is compulsory.
PGB	Male	MSc and PhD in Economics	"Economics" to 2nd-year students of Law (compulsory). He is the coordinator of the courses on Macroeconomics in Business Administration.
PA	Male	MSc and PhD in Economics	"Microeconomics," "World Economics," and "International Trade" to students of both Business and Engineering.
MFF	Male	MSc and PhD in Economics He worked for the Directorate for Employment, Labor, and Social Affairs at the OECD	"Economic History" to students of Business and Administration.

Table 1. Profile of the panel of experts.

There are several steps to follow when planning a course. By far the most complex and intriguing one is choosing the course content and the rationale behind it. It was, therefore, decided that semi-structured interviews were the best fit for this purpose. To guide the interview four main questions were posed:

- Which topics do you typically include in your courses? How did you decide on them?
- What are the difficulties, if any, that you find when teaching economics to non-economics students?
- What are the competences that you would like your students to develop?
- Do you include real cases (or daily life examples) in your course?

The discussion generated around these questions enabled the research team to enter more depth about specific issues raised by the participants that were considered to be relevant and that require additional clarification.

Interviews were scheduled and took place between February 3 and February 7, 2020. Each interview lasted no longer than 1 hour, and the conversation was entirely recorded and transcribed later.

Students' perspective. Students were the other important source of information. We collected their points of view by means of an online survey. As the expected outcome of this study was to provide an appealing course for non-economics students, it was necessary to investigate how confident they were in economics and finance. To the best of the authors' knowledge, there is no validated scale/survey to explore the literacy level of higher education students in economics. Building upon the key reasons why students should learn economics (as elaborated in section 2) and the conversations hold with the group of experts, three main dimensions emerged on which a course targeted to non-economics students should revolve around, namely, introduction to economics, entrepreneurship and economics for daily life. For each of these dimensions we looked at the key concepts they entailed and formulated a question referring to it (see Table 2).

Dimension	Code	How confident you are in…
Introduction to economics	I1	understanding general economic news on TV?
	I2	defining the origins and causes of unemployment?
	I3	explaining the role of the banking system in the overall economy?
	I4	understanding the accountability of a company?
	I5	understanding new technologies (blockchain, crypto currencies ...)?
Entrepreneurship	E1	properly preparing and explaining a business plan?
	E2	identifying the most suitable source of funding for a startup?
	E3	convincing investors to invest in your idea?
	E4	justifying the economic viability of a project?
	E5	brainstorming in events such as conference and workshops?
Economics for daily life	D1	reading/signing the contractual part of a credit or debit card?
	D2	understanding the differences between direct taxation (IRPF) and indirect taxation?
	D3	defining Value Added Tax?
	D4	going to a bank and asking for a loan?
	D5	looking for alternative funding sources (different from the traditional banking system)?

Table 2. Questions in the survey.

These concepts were introduced in the survey as self-reflective questions, asking students to rate their level of confidence on a Likert scale from 1 to 7. In this way, the responses obtained helped us to identify the knowledge gaps. Note that these items were discussed and refined with the input from the panel of experts in an additional round of meetings held between February 18 and 25, 2020.

Besides collecting material about the main field of study, we also gathered other relevant information such as demographic data (year of study, gender, country, etc.), entry studies and whether they have already attended economics courses at university.

The survey was distributed among students enrolled at the Universitat Internacional de Catalunya (Spain). A snowball sampling technique was used. Responses were collected during March 2020, with a final sample of 185 valid responses. Although only one survey was created, it targeted two different populations: students enrolled in the bachelor's degree in Business Administration (with a strong focus on economics) and students enrolled in a different academic program (in which economics is not as critical as it is for Business Studies). From the responses collected, 57 questionnaires were completed by business students and the remaining 128 came from students enrolled in other courses offered at UIC Barcelona.

The sample is representative in terms of gender (Figure 1). For business students, most of the answers were from men (38), representing two-thirds of the total answers. This distribution follows that of the students in Business Administration at UIC Barcelona (60.06% men and 39.94% women in the academic year 2018/2019). Likewise, the second sample mirrors the overall distribution of students by gender. In our case, 67% of the respondents (86) were female and the general proportion for the university is 35.66% men and 64.34% women.

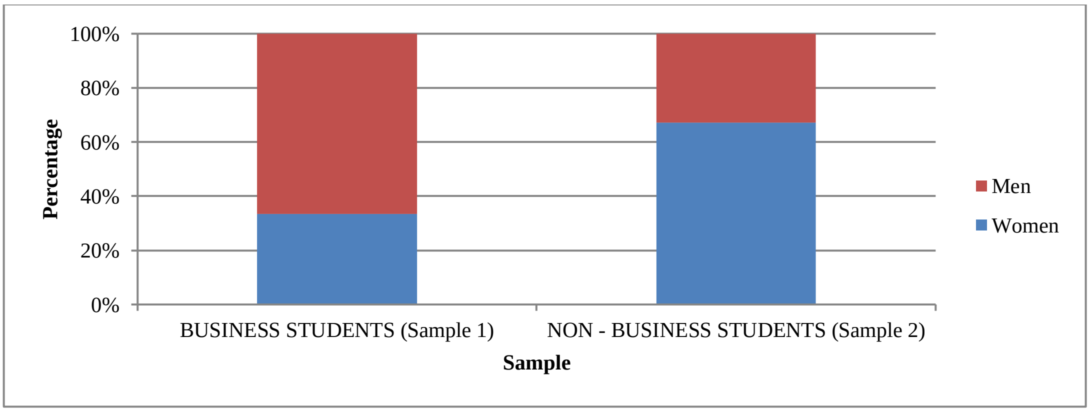

Figure 1. Gender distribution of the two samples.

The respondents were aged between 19 and 23 years old, most of them attending their 3rd or 4th year (a bachelor's degree in Spain is expected to be completed in 4 years). The distribution of students by degree is shown in Figure 2.

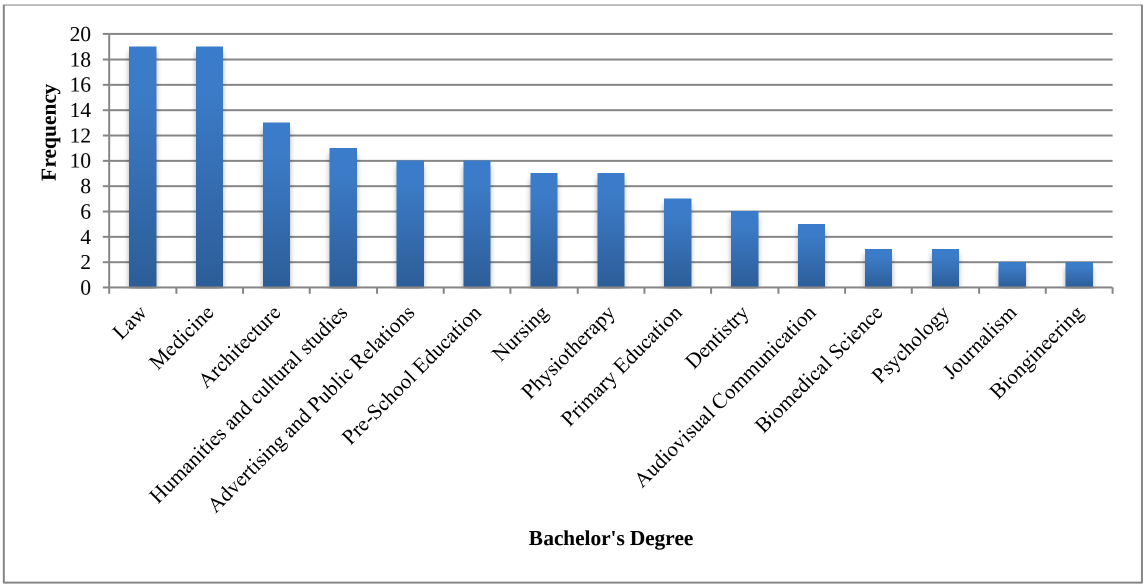

Figure 2. Distribution of students by field of study (bachelor's degree).

4. Analysis of the data collected

4.1. Experts' opinions

From the interviews conducted with the panel of experts, several conclusions arise. First, it is highly important to empathize with the students and understand their interests. A potential course on economics needs to be aligned with the main core of the discipline in which they are enrolled (e.g. medicine, architecture, or law), and the course contents should include examples so that they can see the usefulness of economics in their professional activity. Examples for daily life might also be helpful in engaging students in learning more about economics. In this regard, it is important to connect the areas covered with trending topics, news, or cases that are capturing media attention.

Second, the experts agreed that students tend to have prejudices about economics. Because many of them did not take economics at high school, when they are confronted with key terms and concepts with which they are not familiar, students are reluctant to ask questions and participate in front of their peers (particularly in large classes). Moreover, because some disciplines (e.g. humanities and cultural studies) do not require a strong background in mathematics, when dealing with numerical economic problems, they struggle.

Third, common agreement was found concerning the skills that they aim to develop when teaching economics. Besides providing the students with the key principals and economic theories that are expected to help them analyze the economic-financial environment of organizations as well as the costs associated with their activities, the experts believed that courses on economics should also be aimed at infusing problem-solving abilities, boosting entrepreneurial skills, and promoting reflective capacity and critical thinking in interdisciplinary contexts as well as the ability to confront and evaluate alternatives and make decisions following a rigorous procedure in the presence of multiple criteria and factors.

Fourth, the selection of the teaching method is critical. RMS and MB agreed on the importance of using case studies and generating in-class discussions about real cases of large corporations with which students are familiar. On a different note, PGB claimed that, unfortunately, time is very limited and discourages the use of case studies as students in disciplines that are far from the social sciences are not familiar with the method. Instead, he recommended balancing theory with practice by introducing short but very illustrative examples extracted from the news or from situations in daily life.

4.2. Students' perceptions

First, we analyze the responses by splitting the sample into business students (with a strong focus on economics) and non-business students (any other field of studies). The first sample (business students) can be considered as the treatment group as it consists of students who have already attended some courses on economics at the university. The other sample is considered as the control group (non-business students). At this stage, we are interested in investigating whether there are any significant differences in the responses to the items listed in Table 2.

No surprises are found. As reported in Table 3, there is a clear difference in the average values between the two groups. While, for all the questions, students with a background in business have an average value higher than 6 (on a scale from 1 to 7), non-business students have values that range between 1.88 (E5) and 4.11 (D13). The dispersion (measured by the standard deviation) is also greater, revealing an imbalance among the respondents. Thus, the above numbers provide strong evidence about the differences in the responses among the two groups; while the first sample is less dispersed and has higher scores, the latter is more dispersed and the respondents are less confident in their level of knowledge. To investigate whether these differences are significant, a t-test was conducted, the null hypothesis being that there are no differences between the responses of the groups. For all the items, the results reported p-values lower than 0.05; therefore, we found strong support for the argument that business students are more literate in finance. The larger differences are observable in the module related to entrepreneurship, confirming that studying economics promotes entrepreneurial behavior.

Module	Item	Treatment (Business)		Control (Non-business)		t-test*
		Mean	Std Dev.	Mean	Std Dev.	
Module 1: Introduction to economics	I1	6.47	0.78	3.49	1.29	-16.14
	I2	6.49	0.63	3.48	1.44	-15.05
	I3	6.49	0.60	3.20	1.49	-16.05
	I4	6.63	0.52	2.91	1.61	-17.00
	I5	6.21	1.11	2.02	1.16	-23.03
	Average	6.47	0.73	3.02	1.40	-36.44
Module 2: Entrepreneurship	E1	6.46	0.71	2.74	1.31	-20.09
	E2	6.47	0.71	2.54	1.22	-22.64
	E3	6.51	0.66	2.78	1.27	-20.88
	E4	6.49	0.68	2.66	1.30	-20.81
	E5	6.46	0.76	1.88	1.17	-27.02
	Average	6.48	0.70	2.52	1.26	-48.42
Module 3: Economics for daily life	D1	6.53	0.71	3.23	1.62	-14.72
	D2	6.49	0.66	3.77	1.71	-11.59
	D3	6.51	0.63	4.11	1.65	-10.62
	D4	6.56	0.63	3.25	1.32	-18.01
	D5	6.04	0.94	2.23	1.22	-21.41
	Average	6.42	0.71	3.32	1.50	-30.77
Number of observations		57		128		

* All the values are significant at the 1% level.

Table 3. Descriptive statistics for the two samples.

Second, we concentrate on the second sample (i.e. non-business students) and analyze the results by comparing those who have taken some economics courses at some point despite being enrolled in a different degree from Business Administration (treatment group) with those who have not (control group). Table 4 displays the results, along with those of the t-test. Again, significant differences are apparent, validating the argument that small interventions (such as a course or module) play a role and provide students with a minimum level of literacy in economics. As observed in the previous analysis, the modules in which students struggle the most are those related to entrepreneurship.

Module	Item	Non-business students (N=128)				t-test*
		Treatment (have attended courses on economics)		Control (have not attended courses on economics)		
		Mean	Std Dev.	Mean	Std Dev.	
Module 1: Introduction to economics	I1	3.83	1.52	3.34	1.15	-1.99**
	I2	4.05	1.66	3.22	1.23	-3.55***
	I3	3.63	1.76	3.01	1.32	-2.19**
	I4	3.93	1.75	2.45	1.32	-5.26***
	I5	2.43	1.17	1.83	1.11	-2.77***
	Average	3.57	1.57	2.77	1.22	-6.56***
Module 2: Entrepreneurship	E1	3.40	1.48	2.44	1.11	-4.05***
	E2	2.75	1.28	2.44	1.19	-1.32
	E3	3.15	1.39	2.61	1.19	-2.24**
	E4	3.08	1.53	2.48	1.13	-2.77***
	E5	2.28	1.28	1.70	1.07	-2.52**
	Average	2.93	1.39	2.34	1.14	-5.58***
Module 3: Economics for daily life	D1	3.88	2.15	2.94	1.22	-3.12***
	D2	4.60	2.10	3.40	1.36	-3.88***
	D3	4.88	1.96	3.76	1.36	-3.71***
	D4	3.55	1.50	3.11	1.22	-1.74*
	D5	2.83	1.28	1.95	1.09	-3.96***
	Average	3.95	1.80	3.03	1.25	-6.73***
Number of observations		40		88		

*** denotes significance at the 1% level, while ** indicates significance at the 5% level.

Table 4. Descriptive statistics for non-business students distinguished by whether they have ever enrolled in a course on economics.

4.3. Course proposal

Taking into account the information obtained in the two previous stages and the analysis conducted, a course structured in three modules—containing the same topics as in the survey, which in turn emerged from the literature—was drafted. The proposal was then discussed and refined with the panel of experts.

Below we provide a general overview of the content that each module might cover.

Introduction to economics. This module aims to familiarize students with economic terms. Not all students have a solid background in mathematics, and even fewer have one in economics. An introduction is therefore deemed necessary to provide them with the basics of economics, such as the key concepts (e.g. trade, growth, inefficiency, crisis, and inflation), econometric models, and fundamental theories. Specifically, the topics to address might include:

1. Microeconomic magnitudes: supply and demand curves, opportunity costs, an introduction to the concepts of the demand for goods and services as well as the supply, the underlying factors, how they can be modified, what happens when the

two curves cross, and how prices can move up and down according to scarcity or excess.

2. Macroeconomic magnitudes: GDP, price indexes, IBEX 35, and so on. At this point, the reading and in-class discussion of news articles that deal with the impact of economic policies on employment, GDP, prices, and the stock market might be helpful.
3. The labor market and its characteristics, with a special focus on unemployment, how to estimate it, and its main causes.

Entrepreneurship. This module focuses on boosting entrepreneurial skills among students. The ultimate purpose is to provide students with the tools and steps to follow to transform an idea into a real (and feasible) business. The proposed topics covered in the module are the following:

1. How to raise money: funding opportunities from both traditional systems (banking) and alternative sources (e.g. venture capital, accelerators, incubators, crowdfunding, etc.).
2. Business plan: understanding the factors that need to be taken into consideration when designing a business model and learning the tools that can be used to create it. This module will also cover the design issues that are critical for a viable and sustainable business model and identifying the relevant trends, uncertainties, and risks that might affect the business.

Economics for daily life. Economics can be applied in any field of our daily lives. Everybody has a bank account, pays taxes, and may apply for a loan. This module covers all these situations, which students will confront at some point in their lives. Special attention might be devoted to the following:

1. Banking system: interest rates, how they affect consumption, how to ask for a mortgage, how to ask for a loan, and how to understand a credit or debit card contract.
2. Tax compliance: provide students with a basic overview of the Spanish taxation system and their obligations (e.g. IRPF, social security, and VAT).

5. Discussion and concluding remarks

In a modern and globalized world, interdisciplinarity is a competence that should be promoted at universities. Having this as a premise, there are many points that support the importance of learning economics for students enrolled in any bachelor's degree.

For instance, knowing our economic history can assist us in understanding the changes that modern economies are experiencing. This is helpful in that it can help us anticipate the challenges of the economic cycles, with a focus on policies for economic growth (Masciandaro, 2019). We are aware that resources are limited and that universities need to abide by the department requirements and ministerial orders. Nevertheless, both the literature and practical evidence support the need to increase the average level of economics knowledge among students.

Accordingly, in this study, we stressed the importance of providing students with the opportunity to learn the foundations of economics. As it is shown in the empirical analysis, those students that were not following a major in economics but had been exposed to introductory courses on economics, obtained higher scores in our survey in all dimensions. We tested this by confronting two samples: business students vs non-business students. During a business degree, students study core topics in the field of business, such as marketing, finance, accounting, economics, human resources and operations management. That is, economics is not at the core of the program (as it is for economists), but is part of it. Our argument here is that although business students are confronted with economics for a short period of time (one or a few courses), they gained familiarity with economic thinking and consequently, were provide with a framework for the application of economic theory to real-life problems. In this regard, the empirical analysis conducted validates our intuition that these skills can be learned.

Turning into the specificities of the results, business students were found to have superior literacy levels on economics in the three dimensions under examination (both in aggregated terms and when looking at the items of the questionnaire in an individual fashion), doubling the scores of non-business students. Additionally, the responses among business students are more homogenous, meaning that external environmental factors play a little role and cannot be considered as bias. Largest differences in the responses between the two groups are found in the questions revolving about entrepreneurship. This result can be interpreted by saying that business education includes instruction in opportunity recognition, commercializing a concept, managing resources, and starting a new venture. Therefore, it is not surprising that business students outperform non-business students in questions related to how to raise money and different sources of funding. Also, due to the nature of the discipline, business students are often offered the opportunity to present their ideas in front of a panel of experts, simulating an elevator pitch; consequently, they are more confident in convincing others about their ideas and brainstorming in networking events. Taking altogether these considerations, we suggest that if the goal is to design a course on economics for business students, the modules on “Introduction to economics” and “Economics for daily life” that we proposed in our course design, should gain prominence compared to the one on “Entrepreneurship”. However, if the target population is students in any other discipline, the three modules should be equally distributed.

Another item in the questionnaire in which big differences are found between business and non-business students is item I5, which inquires students about their knowledge on specific technologies linked to economic markets, such as blockchain or crypto currencies. These are hot topics that are part of our economy and are commonly found in the media, not only in the financial section but on the front page. Both concepts are based on brand new technologies that have already shown their ability to disrupt the global system, creating a paradigm shift in the way we look at money and transactions. Given that these technologies are redefining a variety of industries, pragmatic examples of their uses and misuses should be covered in economic courses targeted to non-economist, as regardless the sector in which students will find a job, they are most likely to will have to face them at some point.

The empirical analysis also reveals that among non-business students, those that have attended a course on economics are in an advantageous position, scoring higher than those that did not, meaning that even short exposures make a difference. Again, in the module on entrepreneurship the differences are reduced, as it is increasingly a common practice to include entrepreneurial courses within the syllabus of different disciplines (Mwasalwiba, 2010). Therefore, when designing the module on entrepreneurship it is advisable to concentrate on the financial aspects the entrepreneurial process embraces, namely, understanding the process of acquiring capital and making financial decisions.

The items in which the scores of the two groups were more different are in the module which apparently might have more immediate value for students: application of economics for daily life. Having the knowledge and confidence to engage in conversations about the economy is an essential skill, as economics is at the centre of every public debate (Smith, 2016). Our survey results reveal that students would found themselves in trouble if having to sign a contractual agreement for a credit/debit card, explaining the differences between direct and indirect taxation or defining what VAT means. These findings stress the importance of providing high quality opportunities to promote economic literacy as an essential part of education, as economics should be a tool at everybody's arm's length.

All in all, this work contributes to the current debates on how to increase the economics literacy of the adult population. First, the empirical results support the need for specific courses on economics for non-economics students. We have not only confirmed that undergraduate students lack the economics literacy necessary to make better informed decisions, but we have also identified in which areas the greatest shortages are. To enhance economics literacy skills among non-economics students, courses need to be effective (Mearman et al., 2015). To this end, we have proposed a course structure that is consistent with the literature, is aligned with the experts' opinions and ensures that the main gaps identified in the survey are covered. Nonetheless, our proposal is just an initial starting point that is expected to help instructors in the first stages of course design and provide an initial outline for it. The three proposal modules need to be developed further and adapted to the specificities of the discipline in which this course might be embodied. That is, the content and the materials provided should be aligned with students' interests and offer meaningful value. This strategy would not only keep students motivated but also empower them in content development and in posing questions as they will find a connection with their personal world (Thoonen et al., 2010). Another key reflection concerns the likelihood of being too ambitious in the course content. Our proposal aims to provide non-economics students with a general overview of economics, exposing the core concepts of economics that everyone should know about in their simplest and most intuitive form; therefore, different topics are covered but without much depth. The ultimate goal is to start a conversation and generate the willingness among students to learn more.

Second, this research opens the door for additional studies to examine methodologies for instruction. Following Marangos (2002) and Brunnermeier (2017), the teaching of economics should avoid abstract concepts and mathematical formulation, but instead, demonstrate the relevance of economics for both life and future employment. This strategy implies the use of participatory methods and methods of experiential learning, that is, the use of real-life situations instead of simulated cases. The advantage of this approach and the mixing of different methods is that students do not only learn the fundamentals of the subject, but also develop interpersonal and communication abilities, skills that are highly demanded in the marketplace. Admittedly, there is a positive relationship between the use of active learning methods in economics and students' superior performance (Lagoa-Varela et al., 2018; Hettler, 2015; Wyk, 2012), as moving the student away from the side-lines of the learning process is linked to a deeper understanding of the teaching material and the acquisition of a series of skills that extend beyond the subject. Yet, limited studies reveal how to effectively implement these strategies in courses that fall outside the core topic of a major. Identifying which teaching methods suit best and under which circumstances should be implemented, would be beneficial to both academics and students. The ultimate goal is to find accessible ways to discuss about economics in ordinary terms.

Third, this work proposed a structure and procedure for determining why a specific subject (in this case, economics) matters and therefore why all students—regardless of their specialization—should have a basic knowledge. For instance, there are no law-related subjects in high schools or universities for those students who have not enrolled in a degree in Law, but we are all under jurisprudence and should know the basics. Finally, future studies might consider expanding the geographical scope. For the purpose of this study, we mainly concentrated on the case of Spain and examined students' literacy in economics at a given university. Cross-country studies in this direction might bring interesting insights to this discussion.

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Bibliometric Analysis of Accounting Fraud and Earnings Management During the period 2012-2022

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ABSTRACT

This study performs a bibliometric analysis of articles on accounting fraud and earnings management published in the period from 2012 to 2022. The bibliometric analysis makes it possible to evaluate the production and impact of the scientific literature on the subject under study. To carry out the analysis, the Scopus database was used to search for papers containing the terms "accounting fraud" and/or "earnings management". A total of 688 articles were analyzed. The results show that the United Kingdom, the USA and several Asian countries have published more in this field. Likewise, the journals that have published the most articles on this subject are the Journal of Applied, Business Research, Journal of Business Research and Corporate Ownership and Control. And, the main topics of the articles deal with the relationship between earnings management and corporate governance, ethical aspects, auditing and regulation, together with accounting fraud detection techniques. The study shows a great interest in this subject in the scientific community.

KEYWORDS

Accounting fraud, earnings management, bibliometric analysis, Scopus.

1. Introduction

Fraud and earnings management are matters of high scientific relevance today (Pinda, B.R., 2019; Morales, L.J., 2020). This is a consequence of the accounting scandals that have shaken the markets and undermined the confidence of the economic world in companies that have been affected by this phenomena (Karpoff et al., 2008; Hernández - Gil et al., 2019 and Cornejo-Saavedra et al., 2017). The importance of the fight against accounting fraud is essential in order to achieve compliance with the Sustainable Development Goals, included in the 2030 Agenda. This is crucial because the transparency of financial information must be reliable so as to have strong institutions (Goal 16: Promote just, peaceful and inclusive societies).

The aim of this work is to evaluate the production and impact of articles published on fraud and earnings management, through a bibliometric analysis of publications collected between 2012 and 2022. Thus, the methodology used responds to an exploratory analysis of the scientific production related to fraud and earnings management in the period 2012-2022 in a recognized database to present the results and conclusions and, assess the trend, in more than a decade, of this problematic. The results reflect direct relationships with corporate governance, with ethical aspects, with regulation, as well as with the techniques of detection and prevention of accounting fraud.

The database used is Scopus and the bibliometric study focuses on the concepts of accounting fraud and earnings management, in the period 2012-2022 according to the academic literature analyzed.

After the introduction and the characterization of accounting fraud and creative accounting, the exploratory methodology of the bibliometric study is detailed and the results are presented, which allow, through the appropriate discussion, to present the conclusions of the study, identifying the limitations of the work and future lines of research.

One important contribution of this research is the confirmation of the scientific interest of the subject studied and its relationship with the objectives of transparency and sustainable development. Other contributions are the knowledge concerning the countries more active in the research of accounting fraud and earnings management; the journals that have published more about these matters and the concrete topics of the articles published, which deal mainly with the relationship between fraud and earnings management, and other relevant aspects of organizations such as corporate governance (gender diversity, profile of board members, etc.), auditing (characteristics of audit firms and auditors, fees, etc.), ethical aspects of finance, types of accounts manipulation and techniques for detecting frauds.

1.1. Accounting fraud and earnings management (accounting manipulations or creative accounting)

1.1.1. The importance of accounting information in the enterprise

The analysis of a company's accounting information provides useful information on its economic and financial situation, as well as its strengths and weaknesses, which will allow both its managers and other interested parties (shareholders, suppliers, employees, financial institutions….) to make more informed decisions (Amat, 2005). According to Sandoval and Abreu (2008), financial statements, whatever the size of a company, are one of the fundamental instruments for making decisions on its present and future viability, and thus achieving the objectives that have been established.

However, for the company's accounting information to be useful for decision making, it must be accurate, which means that this information must show a true and fair view of the company's economic and financial situation (Cañibano, 1987), since if the accounting information is not correct, the decisions taken on it may not be appropriate and/or may lead to error and be detrimental to those who have made the decision based on this incorrect information.

The reasons why the accounting information may show a picture that does not coincide with the company's reality may be of different kinds. For example, it may be the result of a misinterpretation of current regulations or even ignorance on the part of the person responsible for preparing the company's financial information. In this case, it is an accounting error in which there is no intentionality and once the accounting error is discovered, the accounting accounts are restated and the error and its correction are reported.

Another reason why the financial information does not show the reality of the company is due to the intervention in its preparation process so that the annual accounts show a different image to the one that would have resulted in the case of not having produced this manipulation according to the interests of managers and administrators, thus deceiving the users of these accounts (Amat, 2017).

1.1.2. Earnings management concept

We can refer to the earnings management in different terms. According to Elvira and Amat (2008), the US literature uses the term earnings management, while in the UK the term used is creative accounting. Gisbert et al. (2005) define earnings management as "any practice intentionally carried out by management, for opportunistic and/or informative purposes, to report desired accounting figures, different from the actual ones". By "creative accounting", Amat, Blake and Moya (1995) mean the process by which accountants, using their knowledge of accounting regulations, manipulate the figures reflected in a company's accounts. In both cases, we observe the existence of "intentionality" on the part of those responsible for preparing the financial information.

In order to carry out the interested modification of accounting information, the company's management can make accounting entries and/or actual transactions (Elvira et al., 2008). In both cases they can be legal or illegal and aimed at modifying profit and/or indebtedness either by increasing or decreasing it according to vested interests. In the first case, these are techniques that take advantage of the different interpretations of the regulations in force, taking advantage of their flexibility or the subjectivity of some of the valuation methods to be used when accounting for the different elements of the balance sheet and the income statement. It would also be the case of possible legal loopholes in accounting regulations. In the second case, we would be dealing with illegal earnings managements or accounting manipulations and would include those real transactions or accounting entries that are not allowed in the legislation and that constitute an accounting crime since it implies documentary falsehood, as well as fraud (Amat, 2017).

1.1.3. Accounting fraud

International Standard on Auditing 240 (ISA 240) reference to the literature defines fraud as "an intentional act by one or more persons in management, those charged with governance of the entity, employees or others, involving the use of deception for the purpose of obtaining an unfair or unlawful advantage". It also refers to fraud risk factors "facts or circumstances that indicate the existence of an incentive or element of pressure to commit fraud or that provide an opportunity to commit fraud." The Association of Certified Fraud Examiners (a non-profit organization whose objective is "to serve the community through the expansion of knowledge and continuing education on issues related to the prevention, detection, investigation and deterrence of fraud and the fight against corruption", being the world's leading anti-fraud organization, with more than 75,000 members in more than 150 countries), hereinafter ACFE, (2022) considers that fraud "can encompass any crime for profit that uses deception as its primary modus operandi".

With regard to the different types of fraud that can occur in the company, according to ACFE (2022) we can distinguish three blocks: theft of assets, corruption and accounting fraud. In most cases, two or more of these types of fraud concur. Asset theft, which represents the most common fraud in companies, with a frequency of 79% of cases; corruption, which represents 12% of cases on average; and finally, and the least common, accounting fraud, defined by ACFE (2022) as "a scheme in which an employee intentionally causes a material misstatement or omission of information in the organization's financial reports". This type of fraud has the lowest frequency in companies, with a concurrence rate of 9%, according to their report published in 2022.

Regarding the different ways of carrying out accounting fraud, ISA 240 identifies the following modalities:

- Manipulation, falsification, or alteration of accounting records.
- The intentional misrepresentation or omission of material facts, transactions, or other significant information in the financial statements.
- Intentional misapplication of accounting principles

There is no ideal type of company for fraud to occur, but rather it can appear whatever its type, size, sector, ownership, as well as whether or not they have prevention and control mechanisms (Zayas, 2016) is not always easy to foresee. ACFE (2022) reaches the same conclusion when it points out that all sectors and industries are prone to corporate fraud, and not only the sector in which the company operates, but also any place within the organization and any country in which it is located, as evidenced by the fact that the fraud cases analyzed are found in 133 countries around the world.

As for the average duration of corporate fraud, ACFE (2022) estimates the average time from the start of the fraud to its discovery at 12 months. This period increases to 18 months in the case of accounting fraud.

1.1.4. The importance and cost of accounting fraud within the company

According to ACFE (2022), the costs and effects on companies caused by fraud committed by their employees and executives amount to an estimated global economic loss from fraud of more than $3.6 trillion. In terms of revenue, this amount of loss represents 5% of corporate revenues. By category, asset theft, which represents the most common fraud in companies, represents a lower average loss ($100,000 per case); corruption represents an average loss per case of $200,000; and finally, accounting fraud (with a frequency of 10%) represents the highest loss, with an average figure of $593,000. Therefore, fraud related to accounting fraud, although the least common category is the one that causes the greatest economic damage.

But the losses caused by corporate fraud (including accounting fraud) are not only economic. The moment the fraud is discovered and comes to light, there is a loss in the image of the company, as well as the distrust of customers and the stock market (Gerety et al., 1997) and any interested party in the company (Amat, 2017), such as workers, competitors (Sadka, 2006) and even affecting the credibility of the market economy system (Rabazo, 2017).

From the above, it is clear that accounting information is essential for decision making, but it is crucial that the information be truthful. However, accounting information is very often unreliable due to the existence of accounting fraud or deception. These are the result of practices, both accounting and modification of actual transactions, which, depending on their nature, may be legal or illegal. Therefore, creative accounting is a relevant problem given the frequency of this type of deception with serious economic consequences, and a bibliometric study is of great interest to understand its nature, causes and consequences in the business world during the time period analyzed.

2. Methodology

Bibliometric analysis is a type of quantitative research that uses mathematical and statistical techniques (Uribe et al., 2019) and allows to evaluate the production of scientific and technical literature (Sancho, 1990; Osareh, 1996) providing quantitative information (on scientific production) and qualitative (on the impact of this production) (Velasco et al., 2012), at various levels, such as countries, authors, journals, institutions (Macías et al, 2021). This is a widely used methodology that allows knowing the characteristics of scientific production in terms of size, growth and distribution of scientific documents and also allows knowing the groups of users and authors of these documents, as well as their content (Bordons and Zulveta, 1999; González de Dios et al., 1997; Velasco et al., 2012). There is no consensus on when it started to be used. As a sample, some authors place the beginning around 1890 (Sancho, 1990) and others in 1971 (Ardanuy, 2012).

Bibliometric indicators facilitate the analysis of the different characteristics of scientific activity, linked to both the production and consumption of information (Flores and Aguilera, 2019). According to the classification of Ardanuy (2012), we can find the following types of indicators: personal, production, dispersion, visibility or impact, collaboration, obsolescence, and form and content. González de Dios et al. (1997) summarizes them in indicators of scientific quality, scientific importance and scientific impact.

Bibliometric indicators are not free of limitations such as the lower incidence of the quality indicators of the papers, excessive weight of quantitative indicators in relation to the articles to the detriment of qualitative variables; many citations are not related to the article that is cited... (Agarwal et al), 2016; Camps, 2008; Flores and Aguilera, 2019) and sometimes its validity has been questioned (Ardanuy, 2012); although there is consensus on its acceptance and recommending its use with caution and comparing homogeneous groups (Sancho, 1990).

2.1. Database selection, search strategy and inclusion criteria.

The present work constitutes an exploratory bibliometric analysis on the scientific production related to accounting fraud and earnings management in the period 2012 - 2022. For this purpose, the bibliometric database Scopus will be used. As search strategies, it will be used, on the one hand: the combination of the following keywords accounting fraud and earnings management from the document search section by: Article title, Abstract and Keywords. And, on the other hand, a second strategy is included choosing the period from 2012 to 2022 (in this last year only two months as it has been mentioned before). The search was carried out in March 2022, resulting in a total of 3,459 papers. In order to narrow down the number of documents, the following inclusion criteria were applied: open access, subject area, type of document, title of the source and publication status. Thus, the refined search is integrated by open access articles already published in journals during the period from 2012 to 2022, both included, from the following subject areas: Business, Management and Accounting; Economics, Econometrics and Finance, as well as Social Sciences. The total number of publications obtained after applying the inclusion criteria was 741 records, which, once analyzed and discarding those with different subject matter, is 688 articles, as shown in Figure 1. The 53 articles have been eliminated after checking that they do not deal with topics related to accounting fraud and earnings management.

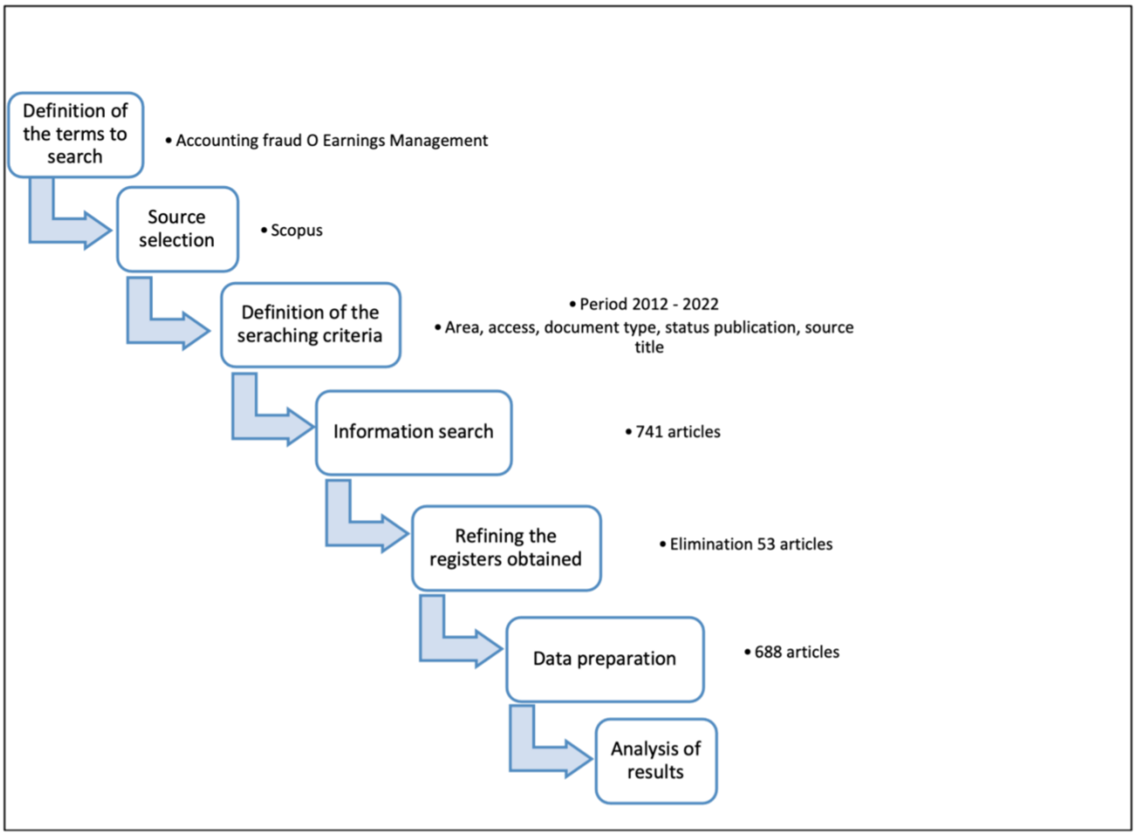


Figure 1. Phases of the methodology used in the bibliometric analysis (Prepared by the authors).

3. Results

Once the records obtained from the Scopus database search were identified, they were analyzed according to the following variables: number of publications per year, country, language, author, keyword, subject area, institution and journal of publication. The results obtained are presented below.

3.1. Distribution by year in the period 2012 -2022

Figure 2 shows a total of 688 articles published, with an average of 62.5 articles per year. As for its evolution, except in the period 2016/2017 in which practically the production is similar, with only one article difference, and in the period 2020/2021 with a decrease of 9.6% of publications, a significant growth in the number of papers is observed (see Table 1). The year with the most publications is 2020 with a total of 114 papers.

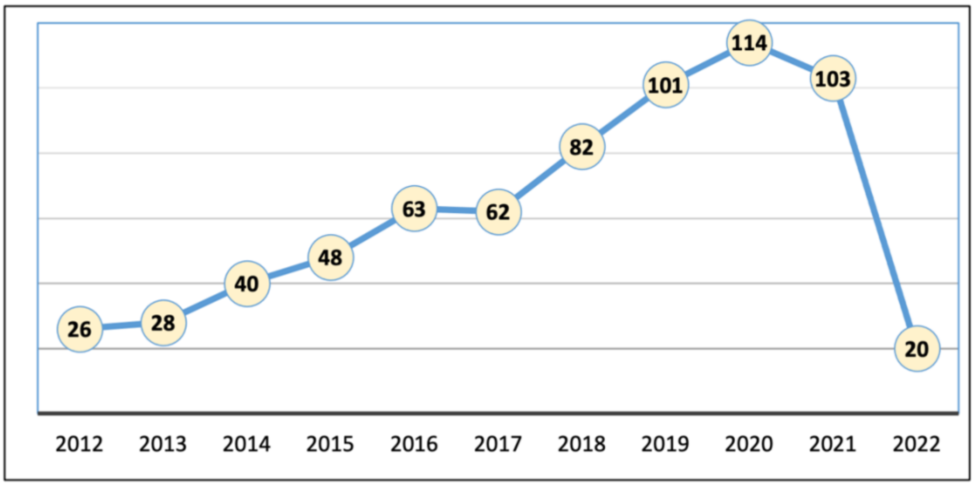


Figure 2. List of articles published on fraud and earnings management by year for the period 2012-2022 (Own elaboration based on the results of the Scopus database).

Period	% growth
2013/2012	7,7%
2014/2013	42,9%
2015/2014	20,0%
2016/2015	31,3%
2017/2016	-1,6%
2018/2017	32,3%
2019/2018	23,2%
2020/2019	12,9%
2021/2020	-9,6%

Table 1. Change in the number of accounting fraud and earnings management articles from 2012 to 2022 (Own elaboration from Scopus database results).

3.2. Distribution by authors

Next, we analyzed the production by authors. We have not reduced the number of articles by author considering if the article has coauthors. Figure 5 shows the distribution of the most productive authors in the sample of 160 authors obtained from Scopus. The mean number of publications per author is 2.6 articles. Of particular note are P.K. Ozili with 9 articles; K. Valaskova, and A.M. Zalata with 7 and 6 publications, respectively. Above the average we also find 5 authors with 5 publications and finally 6 academics with 4 publications.

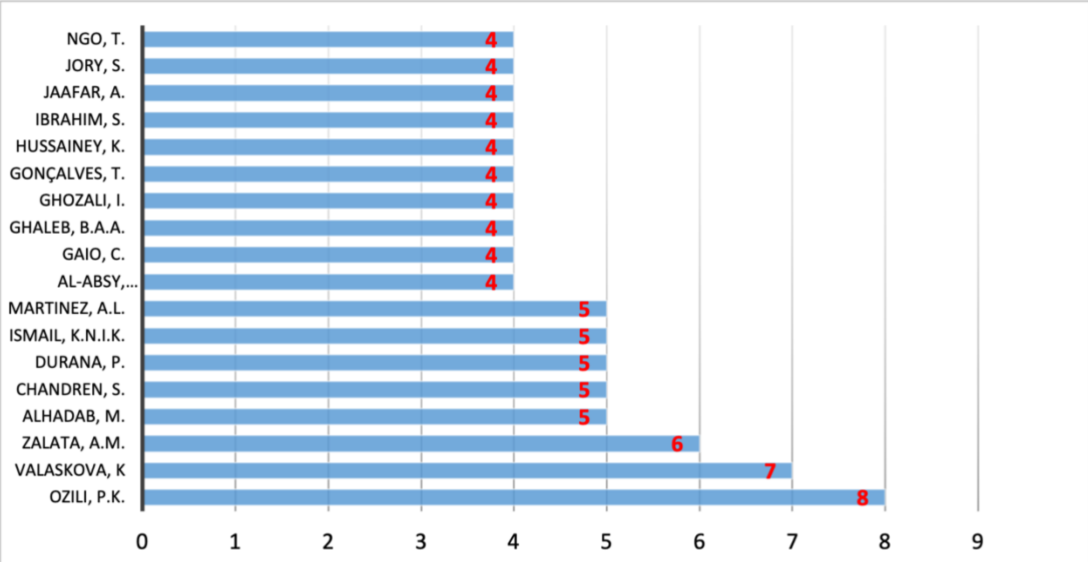


Figure 3. Authors with the highest number of publications on fraud and earnings management in the period 2021-2022 (Authors' own elaboration based on the results of the Scopus database).

P.K. Ozili, as shown in Table 2, with his 8 articles is the most prolific author and has an average citation rate of 10.4 per article.

Article title	Year of publication	NO. quotes
Bank earnings smoothing, audit quality and procyclicality in Africa: The case of loan loss provisions	2017	
Loan loss provisioning, income smoothing, signaling, capital management and procyclicality: Does IFRS matter? Empirical evidence from Nigeria	2015	
Bank income smoothing, institutions and corruption	2019	
Bank income smoothing, institutions and corruption	2018	
Bank earnings smoothing during mandatory IFRS adoption in Nigeria	2019	
Impact of IAS 39 reclassification on income smoothing by European banks	2019	
Financial reporting under economic policy uncertainty	2021	1
Banking sector earnings management using loan loss provisions in the Fintech era	2022	0

Table 2. Article, year of publication and number of citations by P.K. Ozili.

His most cited paper (25 citations) is entitled "Bank earnings smoothing, audit quality and procyclicality in Africa: The case of loan loss provisions" (Ozili, P.K 2017) and is a paper analyzing whether African banks decrease earnings smoothing by manipulating loan portfolio impairments (LLP) in the presence of a Big Four auditor.

The second position is for K. Valaskova with a total of 7 publications. Her most cited article (85 citations) published together with four other authors is entitled "Advanced methods of earnings management: Monotonic trends and change-points under spotlight in the Visegrad countries" (Kliestik, T., Valaskova, K., Nica, E., Kovacova and M., Lazaroiu, G., 2020). In this paper, the authors aim to discover new methods for benefits management in the countries of the so-called Visegrad Group.

The most cited paper by A.M. Zalata (73 citations) is entitled "Audit committee financial expertise, gender, and earnings management: does gender of the financial expert matter?" (Zalata, A.M., Tauringana, V. and Tingbani, I., 2017). This paper investigates whether the gender of the financial experts present in corporate audit committees influences the reduction in the use of earnings management.

3.3. Distribution by country and language of publication.

The 688 papers analyzed come from a total of 74 countries located in the five continents, which shows the global interest in these subjects. Figure 4 shows the 15 most productive countries of scientific articles in the subjects analyzed during the period 2012 to 2022. The United Kingdom is the country with the highest number of publications (112) followed by the United States (93) and China (58). The fourth and fifth positions are held by South Korea (57) and Malaysia (48). If we add these last three positions together, with a total of 163 publications, we can see the importance of Asian scientific production in the literature on fraud and accounting fraud.

Spain ranks 9th with 36 publications, together with Australia.

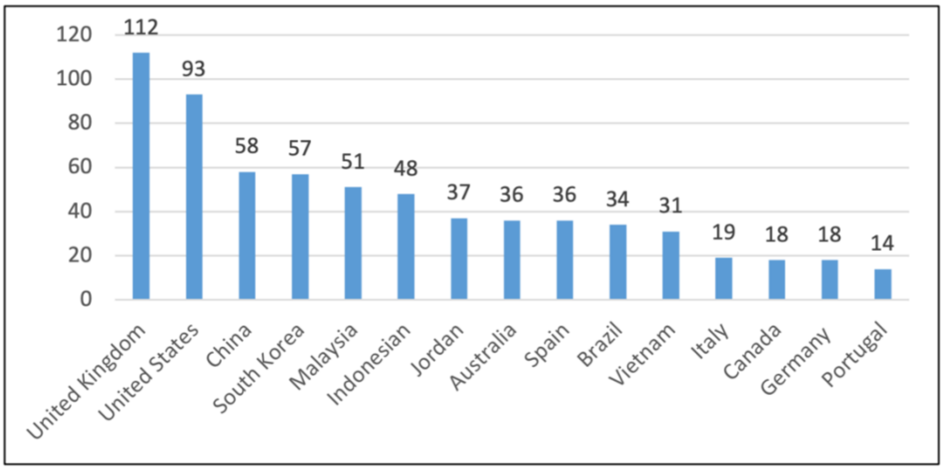
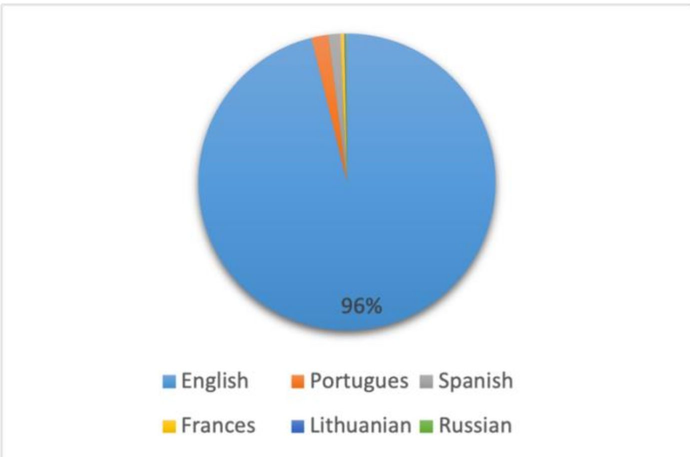


Figure 4. Number of publications on accounting fraud and earnings management for the period 2012 -2022 by country (Own elaboration based on the results of the Scopus database).

In terms of the language of the publications, English is the dominant language for scientific production, with a concentration of 96.1% of the publications. The remaining 3.9% of the records are in Portuguese (1.9%); Spanish (1.3%); French (0.4%); Lithuanian (0.1%) and Russian (0.1%), as shown in Figure 5.



Language	*%*
English	96,1%
Portuguese	1,9%
Spanish	1,3%
French	0,4%
Lithuanian	0,1%
Russian	0,1%

Figure 5. Language of fraud and earnings management articles for the period 2012-2022 (Own elaboration based on the results of the Scopus database).

3.4. Distribution by subject area.

As described in the Methodology section, in conducting this bibliometric study, the filter of subject areas has been applied, limiting it to Business, Management and Accounting; Economics, Econometrics and Finance, as well as Social Sciences.

Given the limitation, and as shown in Figure 6, the bulk of the publications belong to the area of Business, Management and Accounting, with a 46% concentration of publications, followed by Economics, Econometrics and Finance, with a percentage of 32%. Social Sciences represents 9% of the total number of documents, and the remaining 13% of the publications, which are referred to as other areas, correspond to disciplines such as Decision Sciences, Mathematics and Environmental Sciences, essentially.

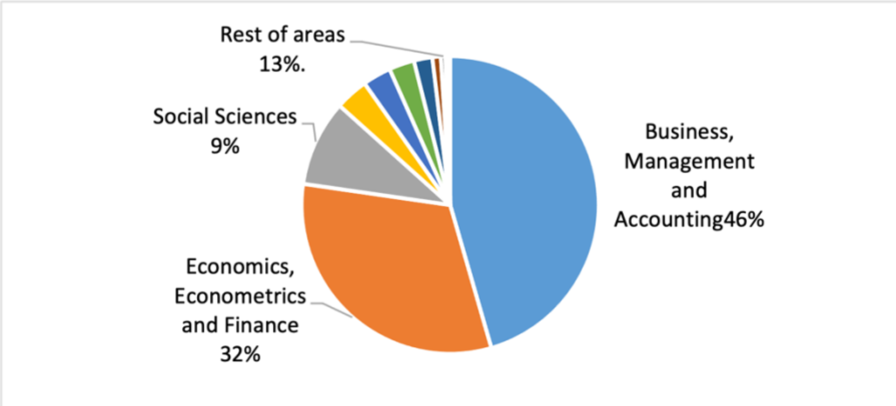


Figure 6. Distribution of published articles on accounting fraud and earnings management in the period 2012-2022 by subject area (Own elaboration based on the results of the Scopus database).

3.5. Distribution by institution

The affiliation by institution refers to the institution to which the author is linked. Figure 7 shows the list of the 15 institutions with the highest volume of published articles. In first place is Universiti Utara Malasya (20 articles) followed by the College of Business, Universiti Utara Malasya (14 articles). In third place is the University of Southampton, UK (13 articles). Southampton Business School is in fifth position (9 articles).

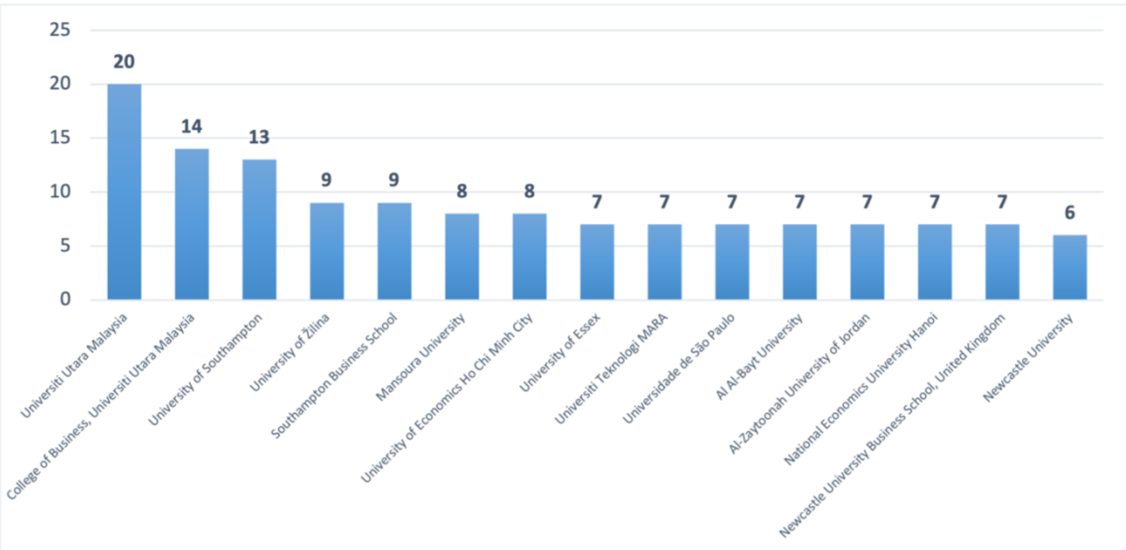


Figure 7. Academic institutions with the most published articles on fraud and earnings management in the period 2012-2022 (Own elaboration based on the results of the Scopus database).

Universiti Utara Malasya, founded in 1984, is located in Sintok (Kedah, Malaysia). In 2020 it was ranked in the 591-600 group of the Shanghai International University Rankings. It is listed in Scopus with a total of 8,897 indexed papers and 2,431 authors. Figure 8 shows the distribution of the thematic areas of its publications. As can be seen, the area of Business, Management and Accounting represents the most relevant area, with a concentration of 15.2% of the publications; Economics, Econometrics and Finance, 9.9% and Social Sciences, 13.1%.

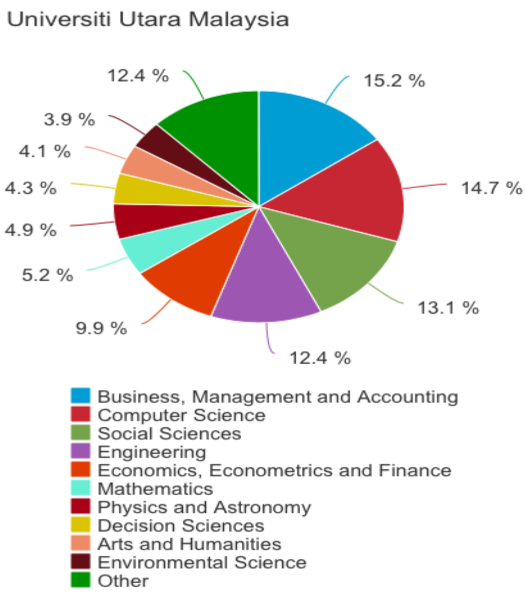


Figure 8. Subject areas of Universiti Utara Malasya publications available in the Scopus database (Scopus database).

In terms of collaborations with other institutions, it collaborates mainly with the rest of the universities and business schools in Malaysia, highlighting the 1,787 joint publications with the university's own business school (College of Business, Universiti Utara Malasya), which is the second institution in number of publications.

3.6. Keyword analysis

Keywords are the words that the authors select from their article and that, in their opinion, reflect the content of the article. They are usually found after the abstract of the document and allow the identification of its subject matter (Bermeo et al. 2021). The analysis of keywords is very useful for those who write and for those who search for information on related works or thematic areas, since they allow, on the one hand, the dissemination of a manuscript, as well as the detection of the relationship between several similar works (González and Mattar, 2012). According to Granda et al. (2003), their usefulness goes beyond a bibliographic search, since they can help in the study and analysis of works by subject, providing information on research currents and aspects of interest to researchers. Of the 160 keywords obtained from Scopus, Figure 9 shows those that appear most frequently in the total number of documents. The first position is occupied by the keyword *earnings management* (430 documents), followed by *corporate governance* (93 documents) and *real earnings management* (77 documents).

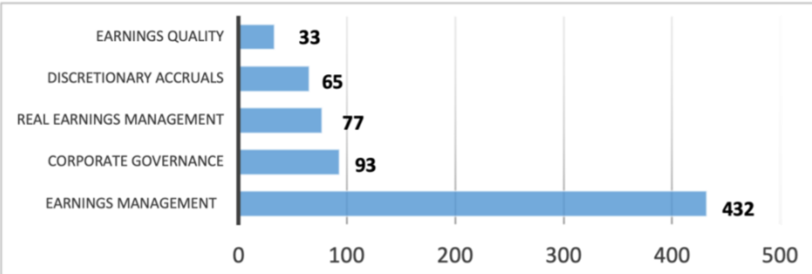


Figure 9. Keywords of the articles published between 2021 and 2022 (Own elaboration based on the results of the Scopus database).

Figure 10 shows the network of keywords by author. Of the total of 62 elements or words, we can again observe that the most cited words are *earnings management*, present in 430 documents, grouped in 9 clusters and linked to 346 other terms.

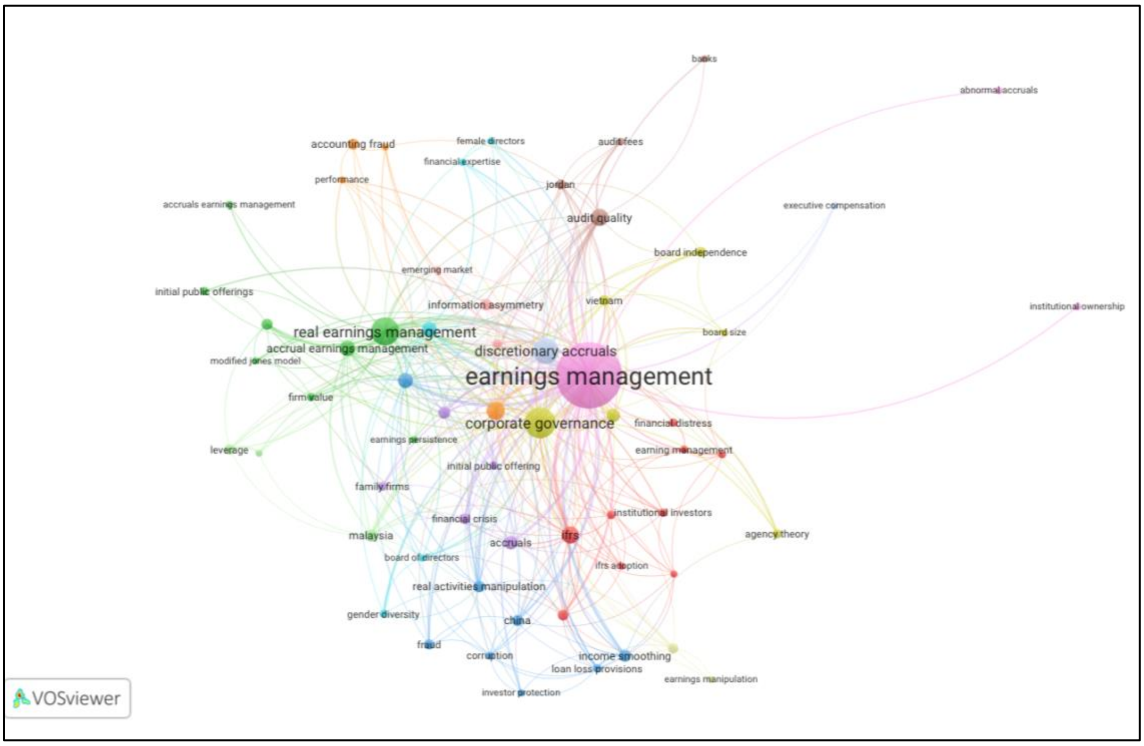


Figure 10. Author keyword co-occurrence map for Accounting fraud and Earnings Management (Source: Own elaboration based on VOSviewer software).

3.7. Distribution by document citations

The citation analysis of a work allows knowing its impact in the academic world. According to Angulo (2013), authors use the citations of a document to inform about the relationship between their work and other texts that have served as reference, it allows them to make known the origin of their ideas, so that their readers can analyze and evaluate their work, as well as verify the data included. It also allows the reader to obtain more information on the topic under discussion. Citation analysis makes it possible to identify those works with the greatest impact in the field of research (Bermeo et al. 2021). The 688 documents under study in this paper have been cited 7,690 times in the period 2012-2022, as shown in Figure 11.

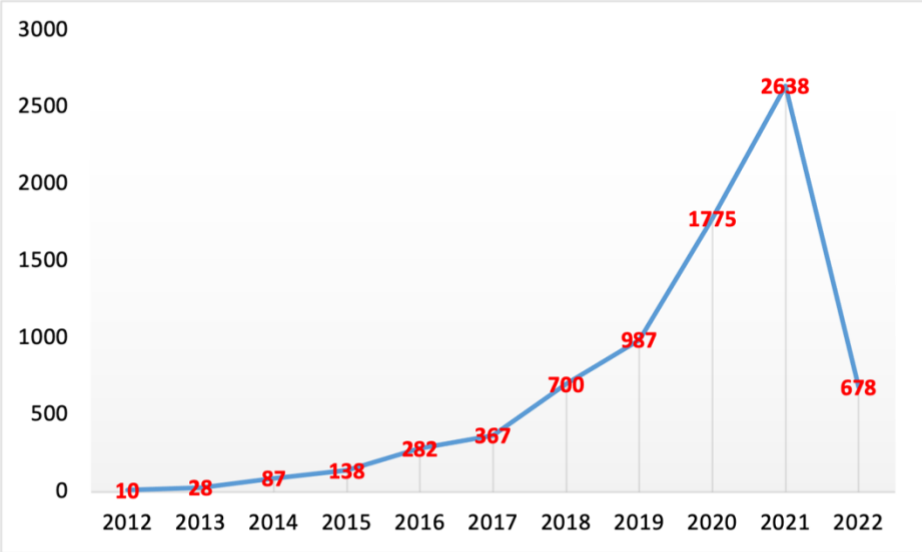


Figure 11. Number of citations of accounting fraud and earnings management articles published between 2012 and 2022 (Own elaboration based on Scopus database).

Order no.	Title	Authors	Year of publication	No. of citations
1	Executive overconfidence and the slippery slope to financial misreporting	Schrand, C.M., Zechman, S.L.C.	2011	349
2	The relation between equity incentives and misreporting: The role of risk-taking incentives.	Armstrong, C.S., Larcker, D.F., Ormazabal, G., Taylor, D.J.	2013	181
3	Board interlocks and earnings management contagion	Chiu, P.-C., Teoh, S.H., Tian, F.	2013	171
4	Earnings management and annual report readability	Lo, K., Ramos, F., Rogo, R.	2017	164
5	Audit quality and auditor reputation: Evidence from Japan	Skinner, D.J., Srinivasan, S.	2012	149
6	Incentives or Standards: What Determines Accounting Quality Changes around IFRS Adoption?	Christensen, H.B., Lee, E., Walker, M., Zeng, C.	2015	140
7	Does Corporate Governance Influence Earnings Management in Latin American Markets?	Sáenz González, J., García-Meca, E.	2014	135
8	Short Selling and Earnings Management: A Controlled Experiment.	Fang, V.W., Huang, A.H., Karpoff, J.M.	2016	133
9	Female directors and earnings management: Evidence from UK companies	Arun, T.G., Almahrog, Y.E., Ali Aribi, Z.	2015	107

10	Accrual-based and real earnings management: An international comparison for investor protection	Enomoto, M., Kimura, F., Yamaguchi, T.	2015	93

Table 3. List of accounting fraud and earnings management articles published in 2012-2022 with the highest number of citations (Own elaboration based on Scopus database).

The most cited publication (349) entitled "Executive overconfidence and the slippery slope to financial misreporting" and authored by Schrand and Zechman is worth mentioning. The paper published in 2011 analyzes whether executive overconfidence in estimating the company's earnings at the beginning of the period is the basis for subsequent earnings misstatements, as these optimistic expectations are not met.

3.8. Distribution by journals

The five journals with the highest number of articles on accounting fraud and earnings management for the period 2012-2022 are shown in Figure 12 out of a total of 159 journals listed in the Scopus results. The average publication per journal is 4 publications/journal.

The journal with the highest number of articles on fraud and earnings management is the Journal of Applied Business Research (Q4 2021, Business and International Management), with 36 publications representing 5.7% of the production. This is an open access journal from the United States that brings together articles from the areas of business and economics research. In second place is the journal Corporate Ownership and Control (Q4 Scopus 2019, in Business Management and Accounting), with 34 articles representing 5.4% of the articles. This is an open access journal from the United States, owned and published by Virtus Interpress, whose publications are mainly articles on corporate governance. In third place is Sustainability Switzerland (Q2 Scopus 2021, in Management, Monitoring, Policy and Law), with 31 publications, accounting for 4.9% of the total number of articles published. Like the previous journals, it is also open access, from Switzerland, and focuses on sustainability research.

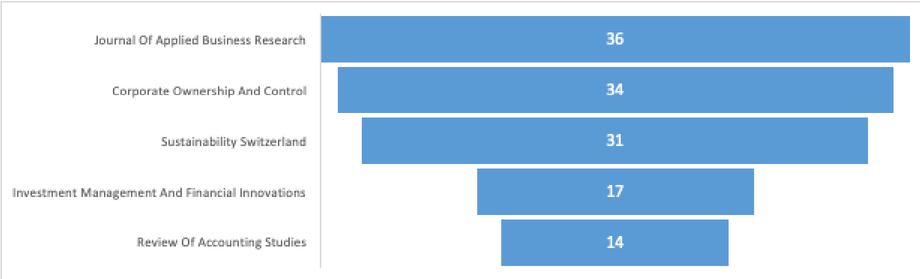


Figure 12. Journals with more articles on accounting fraud and earnings management published between 2012 and 2022 (Own elaboration based on the results of the Scopus database).

Regarding the countries of origin of the five publications shown in Figure 12, three of them are from the United States, one from Ukraine and one from Switzerland.

3.9. Main topics covered by the articles

Another aspect that has been analyzed is the main topic of each of the articles analyzed. Considering the high number of articles analyzed in the majority of them the concrete topic has been identified reading the abstract. In a small number of the articles it has been needed to read the article in order to identify the topic. As shown in Table 4. During the period 2012-2020 the main topic of study on fraud and earnings management has dealt with: Corporate governance and earnings management (20.35%), highlighting the articles on the composition and quality of the members of the corporate governance, in aspects such as: the incorporation of women in the management bodies, independence and financial knowledge of the members. Other topics in order of importance have been: Ethical aspects of accounting make-up (10.66%), Relationship between auditing and accounting make-up (9.69%), Incidence of regulation on the quality of accounts (7.75%) and accounting manipulation techniques (6.78%). These terms coincide with the importance and frequency of the keywords analyzed in the previous section, highlighting that the three most frequent topics account for 40.7% of the total number of publications.

	Topic	**%**
1	Corporate governance and earnings management	20,35%
2	Ethical aspects of earnings management	10,66%
3	Relationship between auditing and earnings management	9,69%
4	Impact of regulation on the quality of accounts	7,75%

5	Accounting manipulation techniques	6,78%
6	Incidence of management profiles on earnings management	4,17%
7	Earnings management detection techniques	3,88%
8	Relationship between institutional investors and account quality	3,78%
9	Relationship between audit committee and accounting fraud	3,39%
10	Takeover bid and accounting manipulations	2,91%
11	Accounting manipulation with real transactions	2,71%
12	Incidence of religion on earnings management	2,42%
13	Country characteristics and account quality	2,03%
14	Non-profit companies and earnings management	1,94%
15	Relationship between budgets and earnings management	1,84%
16	Incidence of incentives on earnings management	1,80%
17	Quality of financial information	1,72%
18	Financial instruments and earnings management	1,45%
19	Influence of the economic sector on earnings management	1,43%
20	Impact of language on the quality of accounts	1,41%
21	Relations between politics and accounting make-up	1,21%
22	Competitive environment and earnings management	1,16%
23	Dividends and earnings management	1,11%
24	Information transparency	1,05%
25	Insider trading and accounting misrepresentation	1,02%
26	Government policy and quality of accounts	0,97%
27	Company typology and earnings management	0,78%
28	Incidence of taxation on earnings management	0,58%
	Total	100,00%

Table 4. Main topics covered by articles on accounting fraud and earnings management published between 2012 and 2022 (Own elaboration based on Scopus database).

Continuing with Table 4, other topics covered in the articles analyzed are those that relate earnings management to regulation, the incentives that lead companies or their employees to manipulate their accounts, the influence of politicians, the size of the company, the country and taxation, essentially.

4. Discussion

The research carried out leads to the conclusion that Anglo-Saxon countries (United Kingdom, USA...) and Asian countries are the ones that have produced the most scientific production on these subjects, with the Asian countries showing a slight superiority in the period analyzed in terms of number of publications both at the level of countries and affiliation per institution.

On the other hand, the journals that have published the most on the topics investigated are the *Journal of Applied Business Research, Journal of Business Research* and *Corporate Ownership and Control*. In addition, most of the articles analyzed deal with the relationship between fraud and earnings management, together with other relevant aspects of organizations such as corporate governance and auditing. Regarding corporate governance, aspects related to gender diversity and the role of women on the board of directors stand out. Most of these papers evidence that in those companies in whose board of directors there is at least one woman, earnings management practices are reduced (Arun et al., 2015; Luo et al., 2017; Lakhal et al., 2015 and García Lara et al., 2017). Gull et al., 2017 come to the same conclusion further recommending its incorporation beyond compliance with gender quotas. Another aspect of corporate governance to highlight is the quality of the composition of corporate governance members regardless of their gender status and other characteristics like independence, level of education and financial experience. Most studies show that the higher the number of independent directors, and the greater the financial knowledge and training, the lower the probability of earnings management (Chen et al., 2011; Alves, 2014; Al-Haddad et al., 2019 and Wang et al., 2013). Regarding auditing, aspects such as the conduct of audits in companies (Huguet and Gandía, 2016), audit firm and auditor characteristics (Koh et al. 2012 and Skinner el al., 2012,), audit quality (Abdullatif et al., 2020; and Alhadab et al., 2017) and their fees in relation to the veracity of financial reports (Krauss et al.,2015 and Krishan et al., 2011) occupy most of the literature on this topic. In these cases, the articles evidence a direct relationship of the aforementioned aspects with the greater or lesser use of earnings management by companies.

Other analyzed works investigate the ethical aspects of the accounting practices used (Grougiou et al. 2014; Gras-Gil et al., 2016 and Martínez-Ferrero et al., 2016) which conclude that companies with strong Corporate Social Responsibility implement ethical accounting practices and are less prone to accounting manipulations and the incidence of regulation in accounting deceptions (Mongrut et al., 2019; Ho, L. et al., 2015 and Tsipouridou et al., 2012). In this case, most authors conclude that IFRS adoption improves the quality of accounting information.

Among the most relevant areas of study are the works on typology of different accounting manipulation, as well as the techniques for their detection, both being of great interest, as they allow detecting deceptions before it is too late. (Bushman et al., 2015; Kliestik et al., 2020; Vladu et al., 2017; Malikov et al., 2017; Anagnostopoulou et al., 2017 and Francis et al., 2014) These works explore several earnings management techniques such as can be: temporary reclassification of revenues and expenses; intangibles, use of provisions, etc. As detection techniques, the positive results of different statistical methodologies such as: Mann-Kendell trend test, Buishaud's test, Grubbs' test, among others, are evidenced. Other interesting detection techniques are the study of cash flows, the relationship between financial leverage and the use of accruals, as well as the use of different economic-financial ratios.

Finally, it is noteworthy the scientific interest in the issue of accounting fraud, in order to achieve the desired transparency of financial information, in favor of sustainable development, in the business world as stated in the 2030 Agenda (Lashitew, 2021). It should be noted that companies follow the Sustainable Development Goals (SDGs) of the United Nations and the transparency of financial information must be reliable so as not to distort decision-making by investors and other *stakeholders*. In addition, innovations in corporate governance and regulation to improve financial transparency are essential.

5. Conclusion

The aim of this paper is to perform a bibliometric analysis of articles on accounting fraud and earnings management published between 2012 and 2022 to assess the output and impact of the scientific literature.

The analysis was carried out using the Scopus database, searching for papers containing the terms *accounting fraud* and/or *earnings management.* In total, 688 articles were analyzed.

Among the main conclusions, we can highlight the following:

- Anglo-Saxon and Asian countries have produced the most scientific output in these areas.
- The journals that have published the most on the topics investigated are the *Journal of Applied Business Research, the Journal of Business Research* and *Corporate Ownership and Control*.
- Most of the articles analyzed deal with the relationship between fraud and

earnings management, together with other relevant aspects of organizations such as corporate governance (gender diversity, profile of board members, etc.), auditing (characteristics of audit firms and auditors, fees, etc.), ethical aspects of finance, types of accounts manipulation and techniques for detecting frauds.

Another relevant aspect of this research is the confirmation of the scientific interest of the subject studied and its relationship with the objectives of transparency and sustainable development.

The work carried out has several limitations and, among them, we can highlight that it has investigated a short period of time, the ten years from 2012 to the beginning of 2022. Secondly, only one database (Scopus) has been used. This database, despite being the one that contains more academic publications at present, does not contain all the scientific production. Another limitation is that only two terms were used (*accounting fraud* and *earnings management*) and in English. Therefore, a large part of the scientific production published in other languages or using other terms to refer to accounting fraud may have been left unanalyzed.

Finally, as future lines of action, it would be interesting to deepen the study using a longer period of time and other databases such as Web of Science or Digital Science's Dimensions. It would also be of great interest to broaden the search terminology (*accounting fraud* and *earnings management*), with other possible terms such as *creative accounting*. Another aspect that would allow us to broaden our knowledge of the subject studied would be to analyze in greater depth each of the works identified. This analysis would provide more evidence on the methodologies used and the results obtained.

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