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# Can a Vlogger Help to Build Brand Awareness? The Impact of Vloggers on Customers' Attitude towards Brand Advertisement and Purchase Intention

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## ABSTRACT

**Objective:** This study derives from the postulates of the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behaviour (Ajzen, 1991) to explore the impact of vloggers on customers interested in beauty products. Particularly, this study examines whether the attitude toward vlogger's recommendations impacts the attitude toward the brand advertisement, and what their influence on consumers' purchase intention is.

**Methodology:** This study applies a cross-sectional mono method of quantitative analysis. The data collection was assisted with the use of survey by questionnaire built on Qualtrics and distributed in China. We use partial least squares structural equation modelling to analyse the data and test the proposed hypothesis.

**Findings:** Vloggers have a considerable impact on customer perceptions due to their proximity to customers who often portray vloggers as 'friends' and value their opinions. This study shows that it is not the perceived usefulness of shared information or vloggers trustworthiness that matter when forming the followers' attitude towards vloggers, but more attention should be given to information quality and the perceived benefits of information derived from vlogs. The strongest relationship in this study showed to be the one between the attitude towards a vlogger and the attitude towards a brand, which emphasizes the importance that content creators can have in building brand awareness.

**Value added:** This article provides a clear picture on exploring the impact of vloggers on customer perceptions. The results of the research can be used to guide companies on how to use vloggers in their marketing campaigns.

**Recommendations:** Considering the growth of social media and the various forms of content available, the companies should know how to apply those new media in their marketing strategies. As the importance of traditional media seems to decline, mostly among younger generations, those new medias are growing, and their application brings new opportunities and challenges.

**Key words:** vloggers, attitude towards vlogger, attitude towards brand, purchase intention

**JEL codes:** M30, M31

## Introduction

Brand awareness refers to the extent to which consumers are familiar with a particular brand and can recognize it when they encounter it. Social media platforms have become an important tool for companies to increase brand awareness among their target audience. In addition to creating content and running ads, companies can also use social media to leverage user-generated content (UGC) to increase brand awareness which is deeply connected with communication (Sasmita & Suki, 2015). Customer builds brand awareness via effective communication which can impact his/her decisions while evaluating and selecting a product. The communication between brand and customers is crucial to build consumer's brand preference and brand loyalty (Bilgin, 2018) and the new media greatly facilitate this communication. As the UGC is constantly developing, bloggers have become a powerful tool for companies to increase brand awareness among their target audience.

The studies of consumer buying behaviour are very common in marketing, but still little is known about how content created by vloggers affects consumers' purchasing behaviour, mostly in the cosmetics category. Also, the link between the attitude towards a vlogger and the attitude towards a brand reminds to be investigated. Beauty bloggers produce content that creates a

promotional environment that is targeted to consumers' needs and emotions (Yu, 2021). Therefore, beauty bloggers can attract more people to view their posts, and on this basis, they can retain many viewers and to some extent harness consumers' emotions and influence their purchasing behaviour (Yu, 2021). Thus the main objective of this study is to explore how bloggers influence consumers' behaviour when making cosmetic purchases. To present the main objective, this study intends to answer the following research questions:

1. Which antecedents influence the attitude towards a vlogger?
2. Is there a relationship between attitude towards a vlogger and the attitude towards a recommended brand?
3. How the attitude towards a vlogger and the attitude towards a brand advertisement impact the purchase intention?

This study focuses on the beauty market in China which is one of biggest markets in the world. The cosmetics market in China has become immense as the economy grows (Li et al., 2022). With countless domestic and international brands to choose from, consumers are left in a position of indecision when faced with a multitude of cosmetic brands, or perhaps seeking more detailed and personalized products (Yu, 2021). The competition between cosmetic brands comprises not only the quality uniqueness and innovation of the products but also the brand awareness and the efforts of brand promotion (Li et al., 2022). Faced with a crowded and competitive environment, many cosmetic brands are exploring new ways of communicating their brand message and they are expanding new marketing models that guarantee both product quality and personalized emotional marketing to ensure success in the marketplace.

Aiming to achieve the objective of this study and to answer the questions posed, first the theoretical background of this study is reviewed. A conceptual model is proposed, linking the customers' attitudes towards vloggers, attitudes towards brands and purchase intention. Next, the research method is presented, the sample is defined, and data collection procedure and instrument are explained. After applying the partial least squares structural equation modelling, the results that lead to final conclusions are analysed and discussed.

## Conceptual background

With the rise of social media, brands are more inclined to opt for in-stream advertising and video-sharing when choosing their communication methods (Man & Rahman, 2019). In this paper the focus is on vlogs, which tend to grow brands' popularity, and on the social networks which develop their streaming capabilities.

### ***Blogs and vlogs***

A blog is a way of communication in which ordinary people publish their opinions and information to the outside world through the Internet (PLA Publishing, 2013). Bloggers are private, and sometimes autonomous communicators. With modern electronic tools, bloggers deliver a variety of information to an unspecified audience through their blogs (PLA Publishing, 2013).

Bloggers are opinion leaders among their followers, sharing information they have, their experience, opinions and values with others. Consequently, they influence concepts, attitudes and behaviours. Bloggers spend a lot of time in their videos discussing the products and services they are enthusiastic about, and their opinions are considered persuasive because, like other consumers, bloggers are buyers and users of products, so viewers generally find the bloggers' opinions to be an objective assessment (Lee & Ma, 2012). Like a blog, vlog is a short video that is shot, edited and shared with mobile terminals, and it is mainly spread on social media channels. In China, Tencent's WeTV app is driving the explosive growth of vlogging in China, and it seems to be the new media format that differentiates and has advantages over traditional TV advertising (Kang, 2021).

### ***Vlogs in China***

Blogs in China were introduced in 2009 when Sina Weibo combined the advertising, e-commerce, and publishing with unique sociability and convenience. Currently, the platforms with the most active bloggers in China include: Bilibili, Kuaishou, TikTok, Sina Weibo and WeChat, and according to statistics, the



total number of registered blogs oscillates around 31.55 million (Liu, 2019). The growth of online streaming has brought some bloggers to the forefront, and those who run their own successful short video pages are getting more and more visitors and views, thus attracting new audiences (Yu, 2021). As China entered the internet era, vlogs developed on social media became an important tool for brand promotion due to their low cost, ease of production, high interactivity and ease of sharing (Kang, 2021). Unlike previous advertising formats, short video ads can visualize their effectiveness through data such as the number of views and clicks they receive (Yu, 2021). The emergence of the internet has made the opinions of internet users widespread; new ideas are being generated, and new theories that exist on the internet are more easily accepted. The more receptive internet users were the first to try their hand at expressing their views on social media platforms, and they were widely accepted in the online community (Yu, 2021).

Over time, a phenomenon has emerged in China's internet environment, where videos with a huge number of hits and views have led to heated discussions across the internet and even more offline discussions and secondary creations, resulting in an exponential interaction effect (Xin, 2020). In the online communication environment, the efficiency of vloggers' information dissemination can be reflected only in the number of shares and comments. These quantitative targets are conducive to vloggers' better understanding of their audience's preferences, thus enhancing more professional and targeted information for them (Yu, 2021). Vloggers who actively share their experience can reduce the spread of false advertising to a certain extent, as vloggers have purchased and used the product as much as other consumers, and, to some degree, vloggers are on the same side as consumers, which is different from advertising agencies (Lee & Ma, 2012). Beauty bloggers focus on experience portrayed by beauty products and accordingly, they share their feedback on product use and share their experience in short videos, which is particularly important in the process of promoting cosmetics (Kang, 2021). Vloggers have become popular in cosmetics advertising because, in addition to the convenience and social nature of social media itself, the messages conveyed in vlogs can change consumers' attitudes towards video advertising and brands to a certain extent (Xin, 2020).

## ***Social media vloggers and their impact on followers***

Theories of communication and persuasion suggest that the dissemination of information can persuade and change people's attitudes and behaviours (Sokolova & Kefi, 2019). The communicator of the message, the message itself, and contextual factors are the three factors that influence human attitudes (Sokolova & Kefi, 2019). Vloggers can have an influence and reach extended networks (Yu, 2021). For example, vloggers like Li Jiaqi (Austin) and Wang Wei (Vivian) are undoubtedly the best known in the beauty sector in China. The influence they have makes them perceived not only as vloggers but they also become popular opinion leaders (Wang et al., 2020).

It is worth pointing out that most of beauty vloggers start as brand users (Zhou et al., 2021). The consumers of beauty products want to see the effects of a chosen product. By recording the effects of products through short videos (Zhou et al., 2021), beauty vlog creators first become the consumers, and then share their experience and insights from the customer's perspective. What is more, vloggers are also keen to interact with viewers in the comments section, agreeing or explaining their opinions, or answering questions. In such an environment of almost personal information exchange, beauty vlogger recommendations can be even more convincing than celebrity endorsement (Xin, 2020).

To make their videos more realistic and vivid, video production teams and agencies often suggest vloggers portraying their own 'personas', such as a sophisticated and independent career woman or a youthful and energetic college girl, to make the vlogger's image more specific (Yu, 2021; Qi, 2021). In this way the vlogger's image becomes more credible and easier for viewers to relate to. Viewers are always able to point out the vlogger they like the most, the one that will seem closer to their own perceptions and values, and normally showing a distinctive and unique personality which makes the content viewers keep following the vlogger's subsequent videos and updates (Kang, 2021; Qi, 2021). In beauty vlogs, vloggers often present their views in a friendly and easy-going tone, acting like a good friend to the viewer, always willing to give fair advice on skincare, and increasing trust with their fans as much as possible (Wang et al., 2020). The more trust there is between fans and beauty key opinion leaders,

the more the viewers will continue to build on their existing trust in the brands recommended by the vlogger until they eventually turn into loyal consumers of the brand, willingly promoting and advertising the brand spontaneously (Yu, 2021).

Certainly, vloggers alone do not determine consumers' attitudes and behaviours – the quality of short video content is an even more important measure for consumers to examine beauty in vlog ads (Xin, 2020). With the popularity of videos, access to information has become easier and more convenient, which brings with it the problem that viewers' patience is decreasing. A short video that is cluttered, illogical, and full of ineffective information will be ruthlessly ignored by the audience, so the quality of the information in a video is also an important factor in determining the quality of a vlog (Kang, 2021).

Beauty vlogs can be divided into several categories based on the video content. This paper investigates the following categories: product recommendations, make-up tips, skin care knowledge sharing, creative projects and other creative videos (Wang et al., 2020). The creative content of a good video can accurately capture the attention of the audience and achieve satisfactory communication results. It not only delivers an effective product message but can also generate a desire to buy and share, thus enhancing the consumer experience. It is also important to explore whether vlog-recommended advertisements have an impact on consumers' attitudes towards brands while changing their purchasing behaviour (Xin, 2020).

### ***Customer attitudes***

Attitudes are the negative or positive emotions that an individual feels towards a particular thing and ongoing preconceptions (Sparks et al., 2009). Consumer attitudes are an important factor in influencing consumer behaviour and, in general, they can be divided into attitudes towards behaviour and things. A positive attitude positively influences consumer's willingness to buy (Casaló et al., 2011). Herd behaviour is one of the factors influencing attitudes and, in some cases (Kang, 2021), the influence of strong social pressure on individual behaviour. For most people, the use of social software has become part of their

lives, and an important aspect of the initial motivation for using a particular social platform is friends' recommendation (Kang, 2021). It can be argued that today's young people are keen on social media not only for its inherent convenience and social aspect but also because it allows them to catch up with current trends, enabling them to keep up with social trends and build common topics with friends. If one does not grasp the current buzzwords, s/he will face difficulties in gaining acceptance in the social environment (Kang, 2021). Therefore, social platforms with high-quality content can meet this psychological need of users (Yu, 2021). In the context of short-form video marketing, the consumer's willingness to buy is a social act and allows the consumer to perceive the benefits of short-form video marketing.

### ***Theory of reasoned action and theory of planned behaviour***

To discuss the vloggers' influence on consumers' cosmetic purchase behaviour, this article anchors on the Theory of Reasoned Action and the Theory of Planned Behaviour. The Theory of Reasoned Action (TRA) is a social psychology model that explains how people make decisions and how their attitudes and behaviours are influenced by their beliefs, intentions and social pressures. TRA was proposed by Fishbein and Ajzen in 1975. According to the theory, people's behaviour is determined by their intentions, which in turn are influenced by their attitudes toward the behaviour and subjective norms. Attitudes refer to a person's positive or negative evaluations of behaviour, while subjective norms are the perceived social pressures to engage in or avoid specific behaviour (Fishbein & Ajzen, 1975). The Theory of Planned Behaviour (TPB) is a social psychology model that is an extension of TRA and proposes that behaviour is determined by three factors: attitudes toward the behaviour, subjective norms, and perceived behavioural control. Attitudes toward the behaviour refer to the individual's positive or negative evaluations of the behaviour. Subjective norms are the perceived social pressures from significant others to engage in or avoid the behaviour. The TPB differs from the TRA in that it includes the construct of perceived behavioural control, which is the degree to which the individual believes they have control over the behaviour. This construct reflects the

individual's perception of their ability to overcome obstacles that may prevent them from engaging in the behaviour (Ajzen, 1991). Both TRA and TPB have been widely applied in various domains, including health, consumer behaviour and environmental behaviour, and have been used to develop interventions aimed at promoting behaviour change.

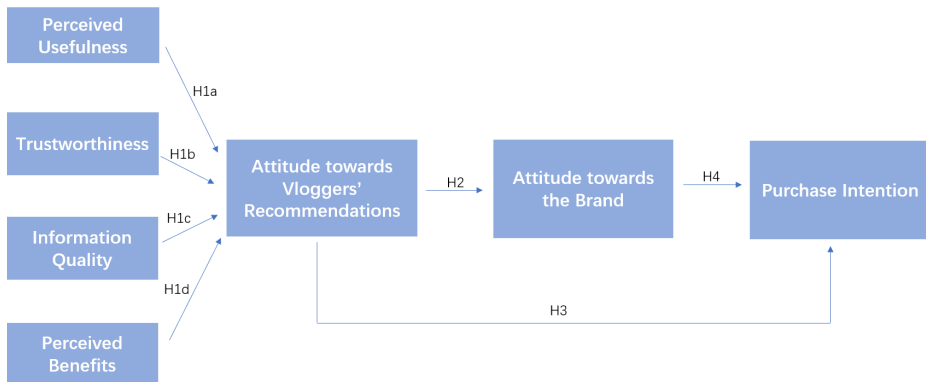
Recommendations from groups play an important role in consumer decisions, especially when purchasing expensive and/or new products and services (Brown & Reingen, 1987). In addition, the Theory of Reasoned Action suggests that individuals can develop beliefs by referring to the information or normative practices of groups and peers. Then those beliefs can influence individuals' behavioural intentions (Hsu et al., 2013). To reduce the risk and uncertainty in a purchase, consumers often rely on the opinions or recommendations of others (Hsiao et al., 2010). These factors create a predisposition to behave in certain way, which ultimately leads to behaviour change (Ing & Ming, 2018).

### ***Conceptual model***

Basing upon the Theory of Reasoned Action, the proposed conceptual model links the customer's perceptions concerning the vlogger and the message shared, customers' attitude towards the vlogger and towards the recommended brand, and finally it relates those dimensions to purchase intention. This setting is based on the model presented by Ing and Ming (2018) and Lee et al. (2017). First, the model proposed by Ing and Ming (2018) that explored the attitudes of customers towards blogger recommendations and their impact on purchase intention. According to Ing and Ming (2018), several dimensions determine the different degrees of influence on consumer attitudes and cause them to change their shopping attitude. Secondly, the proposed conceptual model also considers the impact of vlog ads on the brand itself, as in the study conducted by Lee et al. (2017) where the authors suggested that the information delivered by the ads would have an impact on the cognitive changes of consumers, making them feel pleasure and inducing them to make emotional changes. These cognitive changes not only change advertising attitudes but also brand attitudes. Based on that, the model proposed in this investigation includes consumer vlog ad recommendation

attitude as a variable that affects consumer attitude toward the brand and purchase propensity. Figure 1 exhibits the proposed conceptual model.

**Figure 1.** Conceptual model



Source: Own elaboration based on Lee et al. (2017) and Grace et al. (2018)

## Purchase intention

The Theory of Reasoned Action implies that the stronger the intention of an individual to perform a certain behaviour, the higher the tendency to perform that behaviour (Grace & Ming, 2018). Purchase intention is associated with it, being an important concept in marketing and the main input for predicting future sales as well as marketing actions (Morrison, 1979). Purchase intention is a consumer's intent toward buying a product (Fishbein & Ajzen, 1975). Spears and Singh (2004) define purchase intention as a consumer's conscious plan or intention to try to purchase a product. Lu et al. (2014) examined and defined purchase intention as the willingness of consumers to buy a certain product or service at a particular time and within a particular circumstance. Interestingly, it is noted in the literature that services are more vulnerable to purchase intention than tangible goods. This may be due to the fact that services are more difficult to assess before purchasing than tangible goods, and consumers rely on information provided by various sources to make their judgments (Lohtia et al., 2013).

## **Perceived usefulness**

Perceived usefulness is positively influenced by perceived ease of use because holding other conditions equal, the easier a technology is to use, the more useful it can be (Lee et al., 2012). Compared to formal commercial marketing channels such as traditional paper media or TV and radio media advertising, recommendations from vloggers are considered an informal promotion channel. The length of short videos on vlogger platforms is measured in seconds, and this efficient form of information delivery and dynamic picture-based content has a strong visual impact on the audience. Consumers can visualize the product information and the sense of use in the video, which is certainly an effective way of marketing. Consumers usually positively impact blog recommendations because their opinions are non-commercial. Furthermore, the endorsement of satisfied consumers significantly influences other consumers' purchases. Many direct interactions happen between vloggers and their readers, as most vlogs are two-way communication channels, not just one-way commercial advertising. Therefore, vlogger recommendations are more reliable and valuable than commercials. Thus, in this study we understand usefulness as the degree to which blog readers perceive that adopting blogger recommendations will increase the efficiency of online shopping. Indeed, previous research has confirmed that perceived usefulness significantly affects attitudes and purchase intentions (Hsu et al., 2013). Accordingly, the following hypotheses is proposed: *Perceived usefulness will positively affect audiences' attitudes toward vloggers' recommendations* (H1a).

## **Trustworthiness**

Trustworthiness is defined as the perception of the trustworthiness and goodwill of the person to whom the trust is directed (Wu & Lee, 2016). This definition of trust is relevant in the context of online purchases. A consumer, when faced with a known transaction risk, turns to the other side which he considers trustworthy and well-meaning. Previous research has confirmed that trust is closely related to attitudes toward products and services and purchase behaviour in online transactions (Casaló et al., 2011). Trust is an important factor in

successful online transactions and a key to attracting and retaining customers and gaining a competitive advantage on the internet (Hsu et al., 2013). It can be built during repeated interactions between the vlogger and the audience. Specifically, the target of trust is the vlogger.

Through watching videos and frequent interactions on the vlog platform, viewers become familiar with vloggers and the content they provide, and when doing so, the trust appears. Moreover, this trust might be developed in large part from the record of interactions between vloggers and viewers; a viewer might trust a vlogger's positive recommendation and then shop for a specific product or service on the vlogger's recommended website (Hsu et al., 2013). Other audiences or readers can also rely on the interaction between vloggers and consumers to determine their purchase by confirming their peers' endorsement of the product (Lee & Ma, 2012). The trust that online shoppers have in certain shopping sites may influence their adoption of the sites' systems. By increasing communication with other online shoppers, the site can promote consumer trust and their assessment of the shopping site in terms of perceived ease of use and perceived usefulness, increasing consumers' willingness to use the site (Wu et al., 2012). When consumers are confident that information is accurate because their confidence in with the source is high, they may quit the effort needed to scrutinize the information and simply accept the conclusion as valid without thinking. Therefore, when the vlogger is trustworthy, consumers do not scrutinize the information as closely as they would do when the trust was low. When it comes to the relationship between vloggers and their audience, the most important factor seems to be the focus on the quality rather than the quantity of the response. Vloggers should cultivate consistent, close, and engaging relationships with their audience, and viewers can cultivate greater trust in their recommendations and suggestions (Lohtia et al., 2013). Moreover, the Theory of Reasoned Action demonstrates that an individual's behavioural intentions are influenced by his/her attitudes toward the behaviour in question. Empirical studies based on this theory have found that attitudes positively impact individuals' behavioural intentions. Therefore, this research proposes the following hypothesis: *Trustworthiness will positively affect audiences' attitudes toward vloggers' recommendations* (H1b).



## ***Information quality***

Further persuading consumers to display higher purchase intention, apart from using the trustworthiness of the vlogger and the perceived usefulness of the product, can be also done through sharing relevant information. In the case of vlogs, information quality is associated with the general perception of the quality of the overall content of the vlog (Wang & Lin, 2011). The better and more extensive the quality of information, the higher the level of consumer satisfaction (Park et al., 2007). In addition, as consumer satisfaction increases, so does consumer purchase intention (Park et al., 2007).

The quality of a persuasive argument is represented by two dimensions: argumentative value and argumentative strength (Zhang, 2020a). High-quality commentary involves perceptions of strong and persuasive arguments rather than perceptions of weak and untrue arguments. There has been marketing-related research in the past that showed the manipulation of argument quality by emphasizing the persuasiveness of arguments, using argument strength to emphasize whether the information received would persuade a person to believe something or perform a behaviour (Zhang, 2020a). The perceived value of communication can influence viewers' attitudes toward vloggers' content and recommendations. Similarly, this study considers information quality as a variable that influences viewers' attitudes. Hsu et al. (2013) demonstrated that customer information quality has a positive effect on users' perceived value, which in turn leads to an increase in users' intention to repeat the use of the e-commerce system. This suggests that information quality positively impacts users' intention to use it (Grace & Ming, 2018).

A vlog platform system can be viewed as an information system. When viewers perceive the quality of information within a vlog to be superior to that of other vloggers, they are more likely to form a stronger intention to use the product recommended by that vlogger (Wang & Lin, 2011). Informative reviews will serve as additional information that will increase consumer understanding of the product during the browsing process, reduce perceived risk, and thus increase purchase intent. Therefore, information quality is defined as the viewer's overall perception of the quality of a particular blog's video content (Wang

& Lin, 2011). Consumer perception of video information characteristics such as relevance, comprehension, adequacy, objectivity and sufficient persuasiveness are important criteria for assessing the quality of short-form video content. Advances in online technology have enabled consumers to use and rely heavily on media messages generated by other consumers to obtain valuable commentary. Consequently, the quality of information, especially from more specialized bloggers, is crucial for buyers to form favourable attitudes toward the product. Accordingly, the following hypothesis is proposed: *Information quality will positively affect audiences' attitudes toward vloggers' recommendations* (H1c).

### **Perceived benefits**

In the context of vlogging, perceived benefits are the consumers' beliefs that there is a relative advantage in using the information included in a post/vlog (Lee & Ma, 2012). Consumers gather positive and negative information from vlogs (i.e., benefits versus costs). Normally, they try to use those recommendations to make their benefits outweigh their costs. Consumers can develop favourable attitudes when, on the basis of online reviews, they observe that they will enjoy more benefits than costs. The perception of a positive outcome from a particular option or perceived benefit enhances the consumer's propensity to buy a product. In the case of vlogger recommendations, the relative advantage of using testimonial posts refers to the perceived usefulness of the reviews in helping the consumers gather information about the product's features, functionality, price range, quality and popularity (Grace & Ming, 2018). Consumers form more favourable attitudes toward vlogger recommendations when the perceived benefits are high. According to the available research findings, online consumer reviews have both positive and negative impact on consumer purchase attitudes. The number of reviews is also considered to influence consumer purchase preferences, as many reviews may positively affect product popularity, but too much information hurts readers. Many information-intensive reviews may cause information overload and discourage decision-making by increasing uncertainty (Lee & Ma, 2012). Occasionally, consumers are suspicious of the effectiveness of online consumer reviews because the quality of the

review publisher's credentials is unknown. Conflicting reviews about a product, service or company can also hinder consumer information processing and make it more difficult for them to assess the quality of information (Lee & Ma, 2012). Such a situation can confuse readers provided with an uncertain description of product's quality, thus reducing the usefulness of the review itself.

There is no standard information format for consumers to post reviews. Therefore, each online consumer review is different from other reviews (Park et al., 2007). Typically, two types of reviews can be distinguished: 1) some reviews, such as "this is so good, I'm going to buy another one", or "I can't believe I got this; I'm proud of it", are subjective, emotional and not reasonably argued; 2) other reviews, such as "this product is twice as fast or even cheaper than other similar items", are more specific and explicit, and there is reasoning supporting the claims included. The first type of review is subjective and emotional, and there is no basis to confirm the authenticity of such a review, so it is difficult for consumers to get a definite benefit from such reviews (Park et al., 2007). The latter type of review is logical and rational, and consumers will build trust in the product when faced with it. In the case of vlogs that include recommended ads, the relative advantage of using vlogger's recommendations refers to the perceived usefulness of the reviews in helping the customers gather information about the product's features, functionality, price range, quality, and popularity. Thus, the following hypothesis is proposed: *Perceived benefits will positively affect audiences' attitudes toward vloggers' recommendations* (H1d).

### ***The relationship between attitude towards vlogger and purchase intention***

The opinions of beauty vloggers have a leading role in their audience, and they can control consumer sentiment to a certain extent (Yu, 2021). Following the growth of the beauty sector, China has experienced a frenzy of anxiety about body image. Body image, appearance and grooming are typically the subjects of beauty vlogs. In some extreme cases, one can find vloggers trying to show in their short videos the direct consequences of their own lack of beauty, making the consumers feel like they are able to empathize with the creators (Yu, 2021).

The vlogger can make the followers believe that the cosmetics recommended in a short video can make their overall appearance improve, meaning that the purchase of products will make them more beautiful (Wang et al., 2020).

Under the influence of national beauty vloggers, the population's attention to Chinese brands has grown significantly, even more than that to international brands (Zhou et al., 2021). It is not surprising, as we observe the rise in popularity of short videos which has resulted in the growth in brand communication of makeup products. Brands that seek cooperation with beauty vloggers can have substantial autonomy. A lot of beauty vloggers set up shopping links of their partner brands on their homepage, which facilitates the shopping process for the audience and, to a certain extent, enables the audience to build up a good attitude towards the brand, while the brand also achieves the objective of its brand promotion (Kang, 2021). Thus, the following hypotheses are proposed: *Attitude towards vloggers' recommendations will positively affect audiences' purchase intention* (H2); and: *Attitude towards vloggers' recommendations will positively affect audiences' attitudes towards the brand* (H3).

### **Attitude towards brand advertisement**

Many studies have examined attitude towards advertisement in terms of recognition and emotional aspects of a particular brand product/service in advertising, emphasizing the influence of advertising attitudes on brand attitudes and the influence of advertising attitudes on the brand attitude formation process (Erkan & Evans, 2016; Grace & Ming, 2018; Lee et al., 2017). While brand attitude is defined as consumers' positive or negative attitudes toward a brand and represents the recognition of the emotional aspects of an individual brand, advertising attitudes are generally defined as consumers' favourable or unfavourable reactions to a particular advertisement based on various advertising factors and the emotional changes that occur after viewing an advertisement (Lee et al., 2017). Sales and brand promotion are the purpose of advertising, and today mobile advertising is leading the advertising market because of the popularity of smart-phones. Mobile advertising often has a different purpose than other ad types, and its high advertising value and context-aware value bring important contributions

to brands. After being exposed to mobile advertising, consumers form purchase intentions toward the brand, which is one of the main advantages that the mobile advertising brings. The influence of advertising attitudes on brand attitudes is not limited to products/services of influential brands, but also those of brands with low brand awareness (Lee et al., 2017).

For many years, brand attitudes have been used to explore brand-specific issues alongside brand quality and perceived quality, which allowed marketers to recognize the complex character of consumer-based brand perceptions. Research in consumer psychology suggests that consumers who have more experience with a brand develop more dimensions and categories in their deep knowledge structure. As a result, consumers have more associations with familiar brands than with less known ones, which is very conducive to establishing a good propensity to buy from the brand (Low & Lamb, 2000). Thus the following hypothesis is proposed: *Attitude towards the brand will positively affect audiences' purchase intention (H4).*

## **Methods**

This study applies a cross-sectional mono method of quantitative analysis. The data collection was assisted with the use of survey by questionnaire built on Qualtrics and targeted at consumers who met the following requirements: 1) they buy/use cosmetics and skin care products, 2) they originate from China, 3) they have experience in purchasing cosmetics online, and 4) they have the habit of watching beauty vlogs. The questionnaire was distributed through the most popular social media platforms and applications in China, such as Taobao shopping group chat, WeChat and QQ. The questionnaire begins with two filter questions: "Have you ever watched a beauty vlog?" and "Do you follow any beauty vloggers?". The questions were used to ensure the appropriate target sample for the analysis.

## **Justification of the choice of the country**

With 986 million internet users in mainland China and 99.7% of citizens using cell phones to access the internet (CNNIC, 2021), China has the largest virtual

digital society in the world. Driven by the coronavirus pandemic, the nation has become significantly more digitalized, and it has become a habit for people to use social media and streaming platforms to access information. As streaming media continues to grow, traditional forms of information delivery are getting turned apart (CNNIC, 2021). Online streaming significantly changes the way of how information is delivered in people's daily lives. In China, streaming media platforms such as Sina Weibo, WeChat and TikTok have become important tools for users to obtain information and communicate with each other (Liu, 2019). Due to their advantages (such as low entry barriers and strong interaction), these streaming media platforms are also gaining popularity among industries (Kang, 2021). Many brands have found that advertising on streaming media platforms may be more efficient than the use of traditional media as ads streamed at social media are considered more credible than those delivered using the traditional media (Kang, 2021). Additionally, the entertainment benefits of social media are unique as compared to traditional media, which creates a positive atmosphere for viewers and impacts their attitudes (Kang, 2021). Therefore, the information posted by internet users on social media platforms is prompt to provide more emotional value to the audience and create trust (Shareef et. al., 2019).

As China's economy grows and national income rises, beauty sector is gaining attention and cosmetics are becoming a 'daily necessity'. In 2020, the total retail sales of cosmetics in China were 340 billion yuan, which makes China the second-largest cosmetics consuming market in the world after the U.S. (National Bureau of Statistics of China, 2021). With such a large cosmetic consumer market, competition from major beauty brands has become fierce. International brands, with their brand reputation and excellent product quality, already have a large share of the market of high-end products in China. To date, international beauty brands still have a large and stable user base in the Chinese market (Zhang, 2020b). In the face of the growing competition, Chinese beauty brands are focusing on R&D and marketing, in a way to be able to take their place in the increasingly segmented market. The development of the internet and social media has become an efficient medium for information dissemination, which is changing marketing practices (Zhang et al., 2014;

Zhang, 2020a). With the development of blog platforms, more and more industries are seeking to collaborate with bloggers. The advantage which is bloggers' highly interactive and social nature can assist the organizations to increase their products' market appeal. Indeed, empowered by social media, the cosmetic industry is one of the fastest-growing markets (Qiu, 2019). At the same time, the growth of the blogosphere provides an opportunity for marketers to learn through contact with bloggers, and to use bloggers efficacy in communicating product information: Therefore, selecting the most effective blogs becomes an important part of a successful marketing plan (Lohtia et al., 2013).

### ***Data collection instrument***

To test the proposed hypotheses and answer the research questions, the questionnaire was divided into three parts. The first part consisted of two filter questions, which were supposed to identify whether the respondents had experience in buying cosmetics online and had a habit of watching beauty vlogs. If the respondent answered 'yes' to both questions, the questionnaire continued; if the respondent answered 'no' to one of the two questions, or to both questions, the questionnaire skipped to the end. The second part was based on scales measuring all the study dimensions. To avoid missing data, all questions in the questionnaire were mandatory. The last part of the questionnaire included socio-demographic data, geographic location and residential environment, demand for beauty and skincare products, personal reliance on beauty vloggers, brand choices for beauty and skincare products, purchase intentions as well as other behavioural data.

To measure the variables under investigation, the seven-point Likert-type scales was used in the study. All the scales were based on previous studies (see Table 1), adapted to the context of the study and back-translated from English to Chinese and then back to English. The questionnaire was pre-tested within a group of 10 respondents.

**Table 1.** Measurement scales

Variable	Item	Scale	Reference
Perceived Usefulness	PU1	Vloggers' recommendations improve my shopping performance.	Grace & Ming (2018)
	PU2	Vloggers' recommendations enhance my shopping effectiveness.	
	PU3	Vloggers' recommendations increase my productivity when shopping.	
	PU4	Vloggers' recommendations provide useful information about the product.	
	PU5	Vloggers' recommendations are helpful in understanding the product.	
Trustworthiness	TR1	I believe vloggers' recommendations to be true.	Grace & Ming (2018)
	TR2	I trust information on vlogs to be true.	
	TR3	Vloggers are trustworthy.	
	TR4	Vloggers' recommendations are reliable.	
	TR5	Recommendations posted by trustworthy vloggers are to be considered true.	
	TR6	I think vloggers' recommendations are convincing.	
	TR7	I think vloggers' recommendations are credible.	
	TR8	I think vloggers' recommendations are accurate.	
	TR9	Vloggers' recommendations are more trustworthy than company advertising because they are posted by peers.	
Information Quality	IQ1	In each product video there are sufficient reasons supporting the opinions presented.	Grace & Ming (2018)
	IQ2	Each product video is objective.	
	IQ3	Each product video is understandable.	
	IQ4	Each product video is credible.	
	IQ5	Each product video is clear.	
	IQ6	In general, the quality of each product video is high.	



Variable	Item	Scale	Reference
Perceived Benefits	PB1	Vloggers' recommendations help me reduce the risk of making a decision.	Grace & Ming (2018)
	PB2	Vloggers' recommendations can help me gain knowledge about how the product works.	
	PB3	Vloggers' recommendations can help me obtain general product information.	
	PB4	Vloggers' recommendations can help me assess product quality.	
	PB5	Vloggers' recommendations can help me check product features and functions.	
	PB6	Vloggers' recommendations help me learn about products.	
	PB7	Vloggers' recommendations may provide various opinions about the product that I have never considered.	
Attitude towards Vloggers' Recommendations	ATR1	I think following vloggers' recommendations would be good for me.	Grace & Ming (2018)
	ATR2	I have a positive opinion about vloggers' recommendations.	
	ATR3	I like vloggers' recommendations.	
	ATR4	Overall, my attitude toward vloggers' recommendations is favourable.	
Attitude towards Brand	ATB1	Product branding in beauty vlog advertisements is good.	Lee et al. (2017)
	ATB2	Product branding in beauty vlog advertisements is pleasant.	
	ATB3	Product branding in beauty vlog advertisements is favourable.	
Purchase Intention	PI1	It is highly probable that I will choose the product recommended by a vlogger.	Grace & Ming (2018)
	PI2	It is very likely that I will seriously consider the product recommended by a vlogger.	
	PI3	If I were to make a decision, I would certainly purchase the product recommended by a vlogger.	
	PI4	It is highly probable that I would suggest buying the product recommended by a vlogger.	

Source: Own elaboration

### ***Sample characterization***

This study comprised the responses provided by 251 respondents in total, but only 243 of the questionnaires were considered for the analysis as we have excluded all the questionnaires that were not complete. Therefore, the final sample consisted of 243 respondents originating from China, out of whom 63.7% were female and 36.3% were male. Most respondents were adults (only two were under the age of 18). Out of these, the majority (54.2%) were between 26 and 35 years old. As far as their level of education is concerned, most respondents (55.8%) had a bachelor's degree, followed by those who attended senior high school or vocational high school (21.5%). In terms of occupational status, 46.6% of the respondents are currently employed. When asked about their residence, 52.0% of respondents claimed they live in an urban area, while 24.3% stated that their place of residence is a village. In addition, 24.3% said they live in the suburbs. In terms of income, more than half of the respondents (51.8%) claimed their income is just enough to support their living. When it comes to monthly spending on cosmetics, 33.7% said they spend 200–400 CNY (100 CNY=14.39 EUR) per month on cosmetics, while 30.9% said they spend 400–600 CNY. When it comes to how much attention they pay to beauty vlogs and vloggers, 75.8% of the respondents stated they regularly follow vloggers' updates, and 46.6% declared they sometimes buy beauty products recommended in beauty vlogs. While watching beauty vlogs, 85.6% of the respondents thought they would feel the urge to shop. Finally, 80.9% of the respondents said they would recommend their favourite beauty vloggers to their friends, while 85.6% of them admitted that the communications conveyed in beauty vlogs affect their interest.

### ***Measurement model assessment***

To understand how beauty vlog recommendation advertising impacts consumer purchase intention, we used SmartPLS 4 software that applies partial least squares (PLS-SEM) of structural equation modelling. One advantage of using the PLS approach is that it works well in small samples and does not

require data normality (Davari & Rezazadeh, 2013). Additionally, in PLS the constructs can be measured by fewer than four items. PLS is a robust method using latent variables and causal relationships. The objective of PLS-SEM is to maximize the explained variance of causal constructs by connecting multi-item scales into constructs and defining relationships between the constructs. It can handle complex relationships and can capture several causal structures in a single model (unlike linear regression, which can capture only one causal structure). In the past few years, PLS\_SEM has become a popular technique among researchers (Amaro & Duarte, 2016).

### ***Reliability and validity***

The measurement model was evaluated in terms of indicator reliability (reflecting indicator loadings  $>0.5$ ), item reliability (Cronbach's  $\alpha >0.7$ ), convergent reliability (assessed with average variance extraction, AVE  $>0.5$ ), internal consistency (assessed with composite reliability, CR  $>0.7$ ) and discriminant validity (cross-loading criterion, Chin, 2010). Table 2 describes the indicator loadings, average variance extracted (AVE), composite reliability (CR), consistency reliability (Rho\_A) and Cronbach's  $\alpha$  for each latent variable.

**Table 2.** Reliability and validity

Variable	Items	Outer Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude towards the Brand	ATB1	0.853	0.833	0.837	0.9	0.749
	ATB2	0.868				
	ATB3	0.875				
Attitude towards Vloggers' Recommendations	ATR1	0.839	0.862	0.863	0.907	0.709
	ATR2	0.855				
	ATR3	0.887				
	ATR4	0.783				
Information Quality	IQ1	0.849	0.915	0.915	0.934	0.702
	IQ2	0.873				
	IQ3	0.819				
	IQ4	0.844				
	IQ5	0.805				
	IQ6	0.835				
Perceived Benefits	PB1	0.835	0.92	0.921	0.936	0.677
	PB2	0.842				
	PB3	0.797				
	PB4	0.833				
	PB5	0.846				
	PB6	0.803				
	PB7	0.801				
Perceived Usefulness	PU1	0.793	0.875	0.878	0.909	0.667
	PU2	0.82				
	PU3	0.837				
	PU4	0.822				
	PU5	0.809				
Purchase Intention	PI1	0.832	0.87	0.87	0.911	0.72
	PI2	0.864				
	PI3	0.851				
	PI4	0.846				

Variable	Items	Outer Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Trustworthiness	TR1	0.802	0.935	0.937	0.946	0.66
	TR2	0.833				
	TR3	0.797				
	TR4	0.835				
	TR5	0.783				
	TR6	0.801				
	TR7	0.834				
	TR8	0.832				
	TR9	0.789				

Source: Own elaboration based on SmartPLS

The results prove the reliability of the measured indicators. Since all item loadings exceeded the critical point of 0.5, we can assume that all indicators are acceptable. The average variance extracted (AVE) of the indicators was greater than the expected minimum consistency, ensuring convergent validity (Bagozzi & Yi, 1988; Fornell & Larcker, 1981). The composite reliability (CR) value was also higher than the recommended minimum value of 0.7 (Gefen et al., 2000), indicating sufficient internal consistency across all constructs. The consistency reliability coefficient also represents the expected value (Dijkstra & Henseler, 2015).

### ***Discriminant validity***

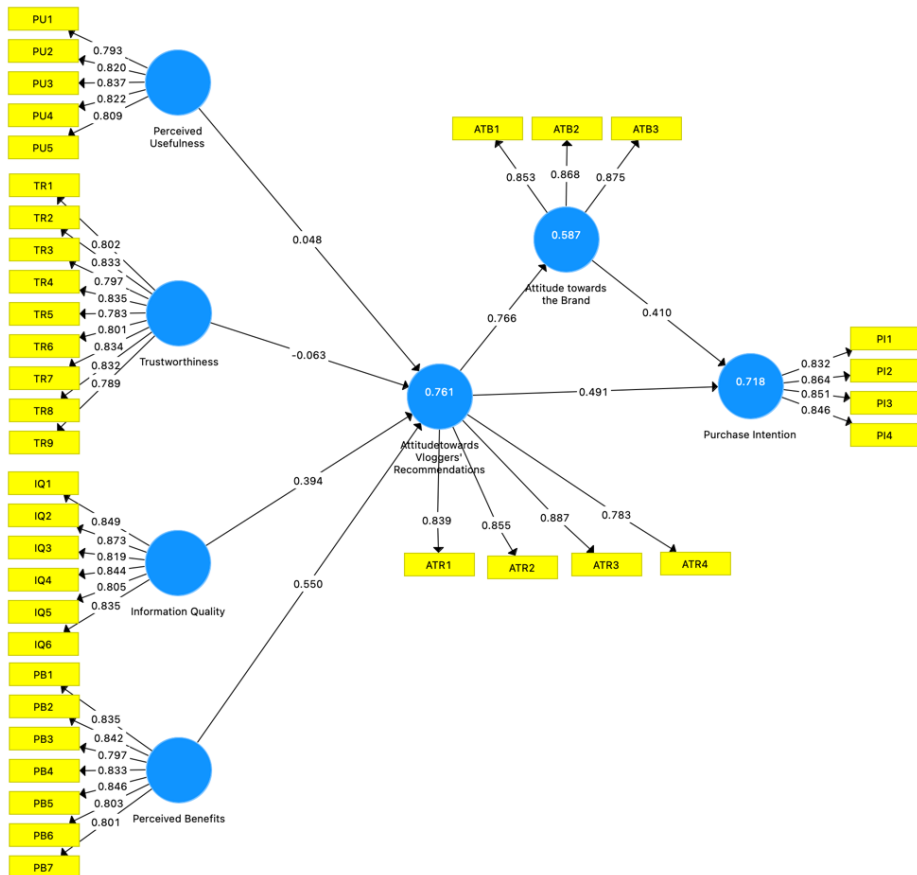
In terms of discriminant validity, the cross-loadings of the indicator items and the Fornell and Larcker's (1981) discriminant validity criteria were applied. The cross-loadings of all indicators are lower than the external loadings, and the square root of AVE is greater than the absolute value of all correlations with other constructs. This confirms the discriminant validity of our scale. All loadings are acceptable, which ensures the strength and reliability of the measured model (Hair et al., 2014). The external model loadings indicate the reliability of the latent variables as they are higher than 0.70 (Henseler et al., 2012). In a

well-fitting model, the structural VIF coefficient should not be higher than 4.0 (Garson, 2016). The highest outer VIF value was observed for item IQ2 (3,266).

## Structural model

Figure 2 illustrates the structural model, showing the beta values of all coefficients, the external model loadings and the R2 adjusted for the dependent variable. Table 3 indicates the estimated model fit.

**Figure 2.** PLS algorithm model



Source: Own elaboration based on SmartPLS

The standardized root mean square residual (SRMR) is a measure of the approximate fit of the model and reflects the average size of the difference between the observed correlation matrix and the correlation matrix implied by the model. If the SRMR is below 0.10, we can consider the model to have a good fit (Henseler et al., 2012) (here SRMR = 0.07, ensuring a good fit of the model).

**Table 3.** The algorithm model fit

	<b>R Square</b>	<b>R Square Adjusted</b>
Attitude towards the Brand	0.587	0.585
Attitudetowards Vloggers' Recommendations	0.761	0.757
Purchase Intention	0.718	0.715
	<b>Saturated Model</b>	<b>Estimated Model</b>
SRMR	0.05	0.07
d_ ULS	1.839	3.659
d_ G	1.078	1.168
Chi-Square	1467.767	1538.171
NFI	0.822	0.813

Source: Own elaboration based on SmartPLS

### ***Hypotheses testing: Bootstrapping direct effect results***

PLS-SEM uses a nonparametric bootstrap procedure to test the significance of estimated path coefficients with two-tails significant level of 5 per cent (Davison & Hinkley, 1997; Hair et al., 2017). Bootstrap estimates the spread, shape and bias of the sampling distribution of the population which the sample under research is drawn from, creating a large, pre-specified number of samples (Chin, 1998). Bootstrap analysis with 5000 iterations of resampling was used to calculate t-values to assess the impact of all hypothesized relationships as shown in Table 4. The hypotheses were accepted as statistically significant if the t-value was greater than the critical value (t-value > 1.96) and the p-value was less than 0.05. The path coefficients, t-values and p-values allow us to accept five of the seven hypotheses

presented. For the models tested, almost all the external model loadings were highly significant, except for 'perceived usefulness' and 'plausibility'. The decision column indicates whether the hypothesis is 'supported' or 'not supported'.

**Table 4.** Summary of hypotheses testing

Hypothesis	Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
H1a	Perceived Usefulness -> Attitude towards Vloggers' Recommendations	0.048	0.047	0.050	0.958	0.338	not supported
H1b	Trustworthiness -> Attitude towards Vloggers' Recommendations	-0.063	-0.056	0.078	0.799	0.424	not supported
H1c	Information Quality -> Attitude towards Vloggers' Recommendations	0.394	0.388	0.074	5.303	0.000	supported
H1d	Perceived Benefits -> Attitude towards Vloggers' Recommendations	0.550	0.550	0.061	9.046	0.000	supported
H2	Attitude towards Vloggers' Recommendations -> Attitude towards the Brand	0.766	0.766	0.034	22.476	0.000	supported
H3	Attitude towards Vloggers' Recommendations -> Purchase Intention	0.491	0.492	0.073	6.737	0.000	supported
H4	Attitude towards the Brand -> Purchase Intention	0.410	0.410	0.066	6.240	0.000	supported

Source: Own elaboration based on SmartPLS



As can be observed, the 'Perceived Usefulness' had a low positive effect on 'Attitude towards Vloggers' Recommendations' ( $\beta=0.048$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ). Therefore, the relationship between 'Perceived Usefulness' and 'Attitude towards Vloggers' Recommendations' was not supported, which goes against the postulates of Grace and Ming (2018) in the study of whom perceived usefulness was positively affecting audiences' attitudes toward vloggers' recommendations. Moreover, there was a negative effect of 'Trustworthiness' and 'Attitude towards Vloggers' Recommendations' ( $\beta=-0.063$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ) noted. Therefore, the relationship between 'Trustworthiness' and 'Attitude towards Vloggers' Recommendations' was not supported.

The 'Attitude towards Vloggers' Recommendations' showed to have a strong positive effect on the 'Attitude towards the Brand' ( $\beta=0.766$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ), and it also has a positive effect on the 'Purchase Intention' ( $\beta=0.491$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ). Therefore, the hypothesis according to which the attitude towards vloggers' recommendations will positively affect audiences' attitudes towards the brand is justified. Compared to the 'Attitude towards Vloggers' Recommendations', the 'Attitude towards the Brand' has a relatively smaller effect on the 'Purchase Intention', but it is still a positive effect ( $\beta=0.410$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ). Consequently, it can be assumed that the attitude towards the brand positively affects audiences' purchase intention.

Finally, both 'Information Quality' ( $\beta=0.394$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ) and 'Perceived Benefits' ( $\beta=0.550$ ,  $t\text{-value}>1.96$ ,  $p\text{-value}<0.05$ ) have different levels of impact on the 'Attitude towards Vloggers' Recommendations'. Therefore, the hypothesis according to which perceived usefulness positively affects the audiences' attitude toward vloggers' recommendations was also verified. The findings confirm that Grace and Ming's (2018) recommendations can be also applied in China.

## **Conclusions**

This study was conducted in the context of a Chinese society where online shopping and online social interaction are highly prevalent. Although the research on vlogger video recommendation advertising is narrow, little has been known

on its application in beauty sector. Moreover, the links between the attitude towards vloggers and the attitude toward brand advertisement remain to be explored. This study fills this research gap and applies the empirical test to the Chinese market, thus making an important contribution to enriching the existing knowledge on the topic that has been little explored. More specifically, this research contributes to a better understanding of the impact of vlog recommendations and provides an opportunity to understand the relationship between beauty vlogs and the intention to purchase beauty products. It also shows a strong connection between the vlogger and the brand advertisement attitude. In this way, this study provides useful information for practitioners as well.

To answer the first research question: "Which antecedents influence the attitude towards a vlogger?", it must be acknowledged that consumer attitudes are defined as consumers' favourable or unfavourable evaluations of specific behaviour (Casaló et al., 2011), and previous studies indicated that perceived usefulness of shared information significantly affects attitudes (Hsu et al., 2013). Indeed, in the light of the previous studies, perceived usefulness is one of the factors influencing the attitude towards vloggers, which could not be supported in this study. Secondly, since trust is considered the key to the success of online business and attracting customers (Hsu et al., 2013) and it can be established between the vlogger and the audience, trustworthiness was expected to be one of the factors that impact the attitude towards vlogger; again, this relationship was not supported in this study. In addition, previous studies showed that the better and more extensive the quality of information, the higher the satisfaction with the content creator (Park et al., 2007). Those postulates were verified in this study, confirming a positive relationship between information quality and attitude towards a vlogger. Previous research also indicated that followers develop more favourable attitudes toward vlog recommendations when the perceived benefits are high (Ing & Ming, 2018), which was supported in this study as well.

Moreover, this research also investigated whether there is a relationship between attitudes toward vlogger recommendations and attitudes toward brand advertisement, and how the attitude towards a vlogger and the attitude towards a brand impact the cosmetics purchase intention in China. The results of this study confirm a strong positive relationship between the attitude

towards vlogger recommendations and the attitude towards branded adds. Finally, we also verified the positive relationship between the attitude toward vlogger recommendation and the attitude toward the brand advertisement, and their impact on purchase intention. The results of this study confirm a positive impact of those two dimensions.

Considering the managerial contributions of this paper, vlogger promotion has become one of the options for beauty brands to create their brand awareness, and this research brings more knowledge on what companies should consider while planning their marketing activities and, particularly, while making a choice of content to be used. This research helps beauty products marketing managers understand how vlog advertising impacts consumer attitudes and realize that consumer attitudes towards the content creator may have an impact on brand attitudes. Regarding the level of interest in beauty vlogs and vloggers, most respondents admitted to regularly search for updates and information. They also admitted an urge to shop while watching beauty vlogs, which proves the efficiency of these new media. This study also recommends companies and marketers to pay attention to the perceived benefits and information quality in vloggers' recommendations as advertisements in vlogs can impact the audience's attitude to the greatest extent. Finally, more focus should be placed on the impact of vlog communication effects on brand awareness because both consumers' attitudes toward vlogger recommendations and their attitudes toward the brand after watching vlogs will affect their final purchase intentions. Therefore, companies should take these dimensions into account to gain more customers and to retain the existing ones.

### ***Limitations of the study and suggestions for future research***

The limitations of this study should be considered in future research. The primary limitation of this study is the use of non-probability sampling technique, which means that the sample does not represent the whole population and does not allow for the generalization of the results. In addition, the sample consisted mainly of women and young people, which could bias the subsequent results. Moreover, vlog promotion is a method that has only become popular in recent years, which results in very little research in this area. It limits the comparative

studies and leads to the existence of few scales that could serve as a reference for an empirical test. Furthermore, in future research it would be recommended to consider that consumers' attitudes towards vlogger's recommendations change along with their attitudes toward brands. Therefore, conducting a longitudinal study would be recommended. Future research should also consider other factors concerning the respondents, such as age, gender or their habits of using social media.

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# Exploring Diversity Management to Avoid Social Washing and Pinkwashing: Using Bibliometric Analysis to Shape Future Research Directions

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## **ABSTRACT**

**Objectives:** The Sustainable Development Goals (SDGs) have been a significant focus of environmental, social and governance sustainability research. Diversity management is one of the challenges faced by corporate governance in achieving SDG 4, 5, 8, and 10. However, rapid demographic changes in the global workforce create significant challenges for human resource development professionals when focusing on diversity management. This paper aims to define the different perspectives of diversity management to avoid sustainability distortions such as social washing and pinkwashing, which promote the perception that policies or products of a given company are socially responsible.

**Methodology:** The analysis of the existing literature can provide the information necessary to answer the research questions using rigorous scientific research methods. In the present study bibliometric analysis was used to enable a thorough and reliable analysis of knowledge on the topic and the identification of future progress. Bibliometric analysis was used to investigate the final pool of 126 peer-reviewed articles.

**Findings:** Contributions include advancing the understanding of diversity management, highlighting the dominance of communication bias, and strengthening the connection between social sustainability and the individual by identifying social exchange theory as a tool for explaining the ongoing changes in corporate governance.

**Value added:** The paper aims to answer research questions related to the journals relevant to the study of diversity management, the geographical structure of the research flow on diversity management, and the possible implications for future research on this topic.

**Recommendations:** In light of the clusters identified, it is recommended that forthcoming researchers explore the fitting theories that can be used to elucidate the phenomenon of diversity management. In addition, interdisciplinary research can facilitate a deeper understanding of issues concerning identity and gender, thereby enhancing the knowledge of diversity among managers. The paper recommends that future studies emphasize the differences in diversity management between national and multinational companies expanding the knowledge by conducting multiple case studies.

**Key words:** diversity management, social washing, pinkwashing, literature review, bibliometric analysis

## Introduction

The Sustainable Development Goals (SDGs) have sparked much research in environmental, social and governance sustainability (Pizzi et al., 2020; Stevens & Kanie, 2016). The United Nations Agenda 2030, adopted by all member states, aims to provide a shared agenda for peace and prosperity for people and the planet, now and in the future, through 17 goals, 169 sub-goals and 232 indicators (Haslegrave, 2016). The effects of sustainability policies depend on how states and other stakeholders, such as businesses which played a key role in the development of the goals (Scheyvens et al., 2016), translate and attempt to address specific indicators and goals through legal, policy and institutional reforms in and across particular sectors (Biermann et al., 2017; Hiron, 2020). Among the governance challenges, diversity management falls under the domain of Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all; Goal 5: Achieve gender equality and empower all women and girls; Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; and Goal 10: Reduce inequality within and among countries (Sadraei et al., 2022). The international focus on the

topic makes diversity management one of the main challenges for corporate governance (Yadav & Lenka, 2022).

Diversity management is an effective corporate strategy to address global workforce diversity issues in organisations (Richard, 2000). However, rapid demographic changes in the worldwide workforce create significant challenges for human resource development professionals to focus on diversity management (Yang & Konrad, 2011). These demographic changes are due to inherent differences in the workforce, such as age, gender, race, ethnicity and value system, which may lead to divisions among the workforce, as well as disagreements, dissatisfaction and conflicts (Harrison et al., 1998). The high focus risks turning social sustainability into lofty marketing campaigns by activating distortions such as social washing (Rizzi et al., 2020) and pinkwashing (de Gennaro & Piscopo, 2023). The term ‘social washing’ defines the misleading use of advertising strategies to promote the perception that a policies or products of a company are socially responsible (Rizzi et al., 2020). The term ‘pinkwashing’ originates from a combination of ‘whitewashing’, which means hiding crimes and vices, or exonerating through a distorted presentation of evidence, and ‘greenwashing’, which is the marketing of products under the pretence that they are environmentally friendly (Schulman, 2011). Recently, the term ‘pinkwashing’ has been linked to discriminatory governance practices regarding homophobic policies and gender stereotyping in general (Blackmer, 2019).

In this context, it appears necessary to understand the meaning of diversity management to avoid the proliferation of distorted communications such as social washing and pinkwashing. Therefore, this paper aims to define the different perspectives of diversity management to avoid sustainability distortions. Its objective is also to rationalise the current literature on the topic and answer research questions from the previous assumptions. Journals drive the academic debate and influence the flow of research on a topic (Zupic & Čater, 2015). Therefore, the first research question (RQ1) is as follows: Which journals are relevant for studying diversity management to avoid communication bias?

Geographical analysis based on the number of publications and author affiliation can provide evidence of collaboration and produce the social structure of the sector. However, collaboration is not always treated as co-authorship, and

studying homogeneous areas can allow interesting inferences about a topic (Zupic & Čater, 2015). Therefore, the second research question (RQ2) is: What is the geographical structure of the research flow on diversity management to avoid communication bias?

Finally, thanks to keyword analysis the connections between concepts that co-occur in document titles, keywords or abstracts are found (Zupic & Čater, 2015). The analysis of the words entered by the authors represents a tool to conceptualise a topic through previous literature (de Bem Machado et al., 2021; Secinaro et al., 2022a). Therefore, the third research question (RQ3) is: What seems to be the possible implications for future research on this topic?

The analysis of the existing literature can provide the necessary information to answer the research questions using rigorous scientific research processes (Biancone et al., 2022; Massaro et al., 2016). The present study uses bibliometric analysis to enable a thorough and reliable analysis of knowledge on the topic and the identification of future progress (Paul & Criado, 2020). Articles published in peer-reviewed journals written in English were considered, resulting in the final pool of 126 articles. For the analysis, the authors used Bibliometrix (Aria & Cuccurullo, 2017), an R-Studio package, which was the interface used by the authors to interpret data with the R language (Yan et al., 2000).

This research has several contributions. From a theoretical perspective, it first advances the understanding of diversity management by examining the numerical aspect concerning the number of publications and reference journals. Secondly, it approaches diversity management by highlighting the dominance of communication bias and discouraging fallacious disclosure through increased academic knowledge of the research areas. Thirdly, it strengthens the connection between social sustainability and the individual by identifying social exchange theory as a useful tool for explaining the ongoing changes in corporate governance. Moreover, the study aims to provide implications for managers and policymakers. Firstly, the research emphasises the crucial role of social equality in international policies, and the fact that managers should incorporate social policy-related indicators into their evaluation plans. Secondly, the research offers information on various inclusive diversity governance approaches. Managers should adopt a mix of governance approaches to avoid

fallacious communication paths leading to social washing and pinkwashing biases. The top-down approach is ideal for driving change in corporate vision and mission, while the bottom-up approach encourages staff initiatives that promote effective employee inclusion. Thirdly, the importance of the hybrid approach for fostering employee work-life balance is highlighted.

## Methodology

This section defines the research methodology applied to explore the topic of Diversity Management.

Specifically, a hybrid methodology, qualitative and quantitative one, was adopted for the study, combining bibliometric analysis and thematic keyword analysis (Cobo et al., 2011; Massaro et al., 2016). This approach allows research variables to be explored objectively by providing a state of the art of publications to date and providing future research implications (Korzeniowska et al., 2022).

Bibliometric analysis, which has become an essential part of modern scholarly productivity assessment, allows authors and journals to be assessed on the subject reference for variables such as the number of publications, number of citations, and impact factor providing insights for the development of a research stream (Choudhri et al., 2015; Donthu et al., 2021). Therefore, bibliometric variables help understand which elements are critical in multiple fields of research (Giovannini & Marcuccio, 2012; Secinaro et al., 2022b; Stanczyk, 2016).

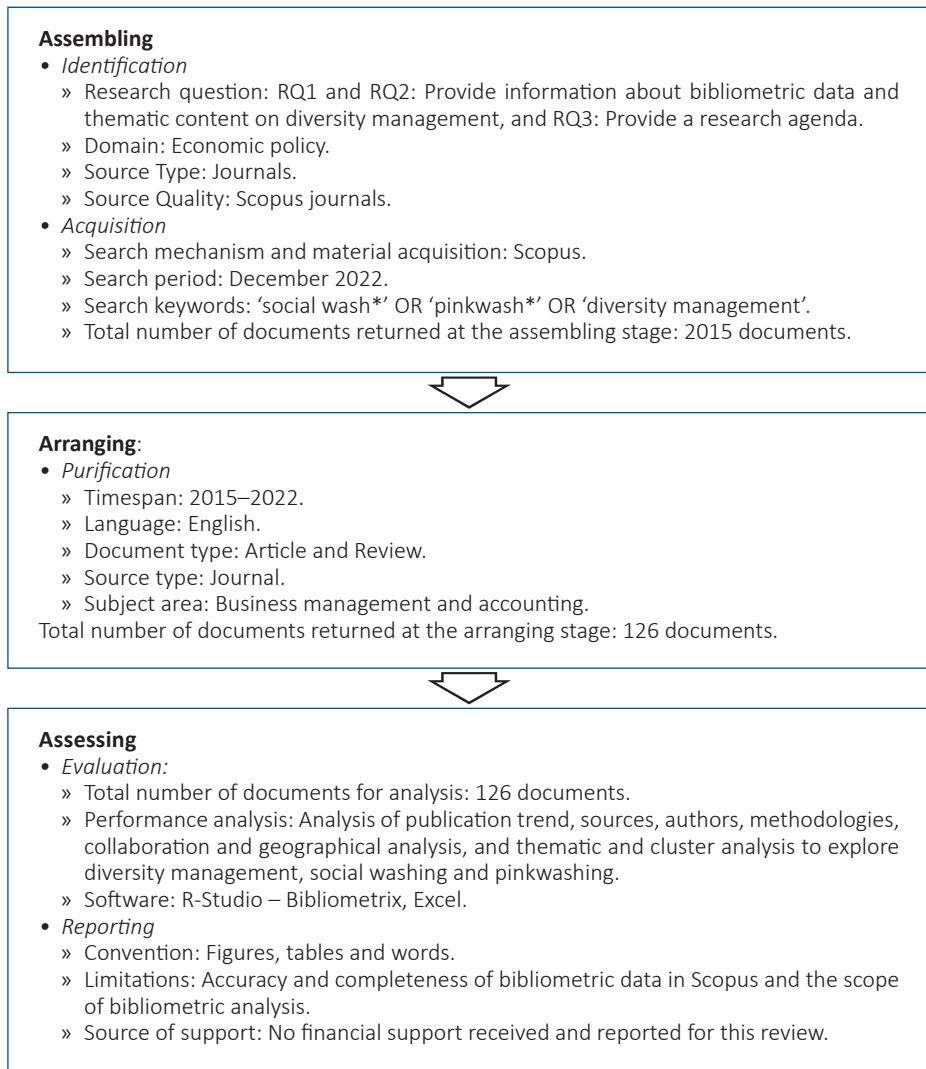
### ***Study design and data collection***

This section aims to identify the study design to answer the research questions previously formulated. The Scopus database was used, as it is one of the databases with greater inclusion of topics related to the social sciences and economics (Okoli & Schabram, 2010).

Bibliometric analysis is applied to consider and measure large amounts of scientific data, such as titles, number of authors, keywords, number of citations,

countries of publications and institutions, as well as collaborations in an unexplored and new strand of research (Biancone et al., 2021; Uluyol et al., 2021). The analysis used Bibliometrix R-Package and the Biblioshiny app analysis of bibliographic data (Aria & Cuccurullo, 2017).

**Figure 1.** Research design



Source: SPAR-4-SLR protocol. Authors' elaboration on Paul et al. (2021)

The analysis was limited to articles and reviews, as they are continuously verified by peer review and published in scientific journals (Calandra et al., 2022; Secinaro et al., 2021). Moreover, it was limited to the time frame of 2015–2022, with 2015 being the year when the Paris Agreement on Sustainable Development Goals was signed. The topic of diversity management has increased the interest of researchers in academia. According to Asatani et al. (2020), scientific research in social sustainability can capture trends in sustainability research and impacts on SDGs. Following these criteria, 126 scientific sources ready for subsequent analysis were obtained.

## Results

This section aims to explain the study results by answering the first two research questions. The first paragraph seeks to explore the descriptive literature analysis. In the second one the most relevant sources and the collaboration map analysis will be presented. Finally, the third paragraph is an in-depth thematic analysis based on the keywords.

### ***Descriptive literature analysis***

Table 1 shows the information concerning 126 articles extracted from the Scopus database published from 2015 to 2022 in 77 academic sources. The average publication rate was 13.69 articles per year during this publication period. The average time from the publication of paper is 3.71 years, and each paper was cited 76 times. The authors made 9343 references to other authors and the research presents an average of 465 keywords used to identify research stream. Interestingly, the topic is significantly collaborative among the authors. The analysis shows a collaboration rate of 26.19% with an average of 2.72 co-authors per topic. Scientific collaboration is one of the pillars of modern science, bringing essential contributions for the understanding of the factors involved in the creation, dissemination and transmission of knowledge (Gingras, 2010; Kuhn, 2012).



**Table 1.** Main information

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2015: 2022
Sources (journals, books, etc.)	77
Documents	126
Annual growth rate %	13.69
Document average age	3.71
Average citations per doc	11.59
References	9343
DOCUMENT CONTENTS	
Keywords plus (id)	76
Author’s keywords (de)	465
AUTHORS	
Authors	305
Authors of single-authored docs	21
AUTHORS COLLABORATION	
Single-authored docs	27
Co-authors per doc	2.72
International co-authorships %	26.19
DOCUMENT TYPES	
Article	126

Source: Authors’ elaboration using Bibliometrix

## Most relevant sources and collaboration map analysis

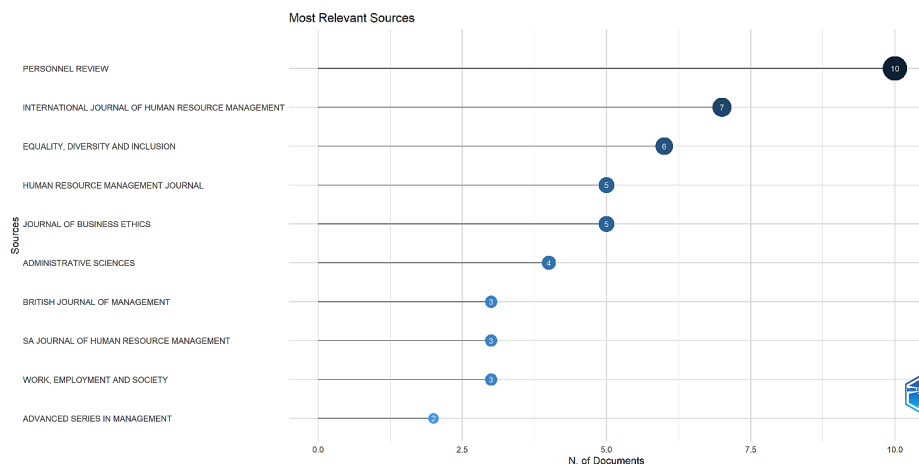
Figure 2. highlights which academic sources are most involved in researching the topic.

The *Personnel Review* source is the first in terms of publications (10). *Personnel Review* (PR) publishes articles that have high originality and engage with contemporary challenges to human resource management theory, policy and practice development.

The second source is the *International Journal of Human Resource Management* (7), a worldwide forum for human resource management (HRM) scholars and practitioners. In the journal, papers on topics covering any aspect of people management and relevant to the field are published.

The third source is *Equality, Diversity and Inclusion*, an academic journal that publishes research on racial, sexual, religious, disability and age discrimination, equal opportunity and affirmative action.

**Figure 2.** Most relevant sources



Source: Authors' elaboration using Bibliometrix

Table 2 and Figure 3 depict the countries with the most significant collaborations. The analysis confirms how much Scandinavian countries are currently

interested in the issue, as they are model countries in Europe as far as policies related to gender equality are concerned. Denmark is known as one of the most gender equality-compliant countries in Europe; the Danish state, with its Strategy for Denmark’s Engagement with the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) 2018–2022, intends to promote gender equality by strengthening existing regulations and developing its governance systems (UM dk). Furthermore, according to a report compiled by the Danish Ministry of Foreign Affairs for the UN Convention on the Elimination of All Forms of Discrimination against Women, the welfare system in Denmark is designed to promote and ensure gender equality (OHCHR, 2021).

The United Kingdom emerges as the most collaborative country; this is due to Brexit, i.e., the state’s exit from the European Union in 2020, which provoked, not only the in political but also in the academic world, essential reflections on the issues of borders, boundaries, territories and equal opportunities. Brexit is a product of social unease caused by the absence of true equality of opportunity.

**Table 2.** World collaboration map

FROM	TO	FREQUENCY
United Kingdom	Netherlands	3
United Kingdom	Turkey	3
Australia	France	2
Denmark	Norway	2
Denmark	Sweden	2
Netherlands	USA	2
Sweden	Norway	2
United Kingdom	Australia	2
United Kingdom	France	2
United Kingdom	USA	2

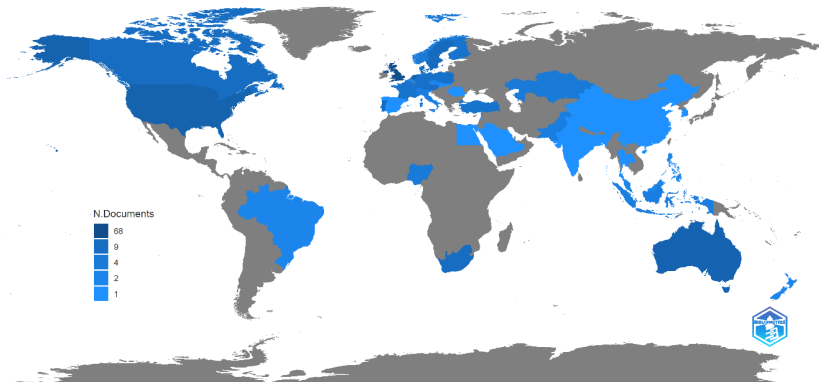
Source: Authors’ elaboration using Bibliometrix

In Figure 3, higher density of colour corresponds to the better reflection of the topic under research (Aria & Cuccurullo, 2017). The figure shows that the

density of blue is higher not only in Scandinavian countries but also in Canada, the United States and Australia as they are multicultural countries and have a strong focus on an equal opportunity, even at the level of policy thinking. At the 2018 G7 Canada, gender equality, an essential value which is good for the world economy, was one of the priorities discussed. Jobs, gender equality and economic growth were the cohesive topics around which the leaders of the world's seven industrialised countries united.

**Figure 3.** Country scientific production

### Country Scientific Production



Source: Authors' elaboration using Bibliometrix

### **Keywords and thematic analysis**

Figure 4 shows a topic dendrogram, a diagram showing the hierarchical relationship between keywords. The dendrogram aims to create clusters by highlighting the match between different keywords.

The dendrogram is composed of four clusters marked with different colours. The red colour defines the theories and areas of application. The blue colour cluster reflects the role of employees, management and diversity management in business. The green colour cluster depicts identity and role – social sustainability, and the purple collection represents the topic of globalisation.

## Theories and application areas

In this section, the red-coloured cluster is analysed, and it reflects on the dialogue between different theories and areas of application. The goal is to include a selection of comments to create a discussion around the theme of ethics at the centre of global and local challenges.

According to Böhm et al. (2022), human rights are central to climate change controversies. From the perspective of consumer ethics, Bohm et al. (2022) argue that ecologically sustainable and socially just market systems require cultural change, a reconsideration of future interpretations of the ‘consumer society’, a challenge to the dominant ‘logic of growth’, and the stimulation of alternative ways to meet our consumption needs.

Therefore, it is crucial to think about the impact of an inclusive environment, so that employees’ performance can be meaningful; one of the leading solutions could be the exchange theory, according to which all human relationships are formed using cost-benefit analysis and comparison with alternatives.

According to Khan et al. (2022), theories and evidence exist that view increasing diversity in the workforce as a positive rather than a negative phenomenon. Evidence from Muslim employees working in different industries in Australia, New Zealand, the United States and Canada was used to explore the positive outcomes of the inclusive environment proposed by the growing Muslim community in the Western workplace. The results revealed that Muslim workers in Western workplaces feel more comfortable and included in the work climate where colleagues from different backgrounds or orientations are interested and encouraged to openly discuss their faith, values and practices instead of carefully avoiding such conversation in social interaction. Therefore, social exchange relationships can influence managers’ perceptions of diversity management (Nachmias et al., 2022).

From the analysis conducted, it arises that gender research and women’s leadership are acclaimed in Scandinavian countries and multicultural countries such as Canada, the United States, and Australia. The critical aspect of virtuous development is the support of school programs that protect and promote women’s interest toward gender equality (Mooney, 2020).

## **Role of employees, management and diversity management in the business environment**

In this section, the blue cluster is analysed, reflecting on the role of management employees and diversity management in the business environment. Diversity management is currently gaining the spotlight in organizations. According to Köllen (2022), a good diversity manager must possess a virtue-based perspective; a perspective based predominantly on diversity management rules makes most diversity initiatives more or less uniform and thus, at the same time, makes the people responsible for these initiatives themselves replaceable.

Organizations should consider introducing policies related to understanding diversity. Time should be taken to get to know and interact with everyone within the organization. An organization that focuses only on performance-related goals would not function well. According to Albert & Lazzari Dodeler (2022), in organizations of individuals and communities of people, the authenticity and centrality of work identity appear neglected in companies. According to Fletcher & Everly (2021), LGBT employees are more likely to benefit from working in organizations with supportive LGBT practices. Poor organizational policies related to gender diversity create relief among populations and employees of different organizations and companies. According to Richards et al. (2019), managerial neurodiversity has been explored through the role of emotional labor meaning. This study helps clarify the benefits of more inclusive employment for historically disadvantaged groups.

## **Identity and role: Social sustainability**

In this section, the green-coloured cluster is analysed, reflecting on issues concerning social sustainability.

According to the research by FederManager, the National Federation of Industrial Business Executives, 50% of women executives do not have children, as compared to 15% of their male colleagues. Thus, many social barriers limit women's career advancement and cause inequalities between men and women in the labour market. Adopting Diversity Management policies implies a cultural change that challenges traditional systems promoting similarity and

homogenization. Work-life balance concerns all actions put in place by organizations to balance care and work time for employees who are increasingly torn between home and office. Combining office commitments and home duties is one of the most sought-after options when choosing one's career path. In this vein, a central role of smart work also deserves recognition. Until recently considered ancillary, agile work has become an unavoidable step from which it will be difficult to turn back due to the pandemic of Coronavirus disease.

According to Worsham et al. (2021), institutional reforms, inclusive hiring policies and transformation of individual attitudes, are starting points for change. Diversity management policies should be developed to combat discrimination and encourage the free expression of all individuals to improve the productivity of individuals and the organisation's overall efficiency.

### **Globalisation**

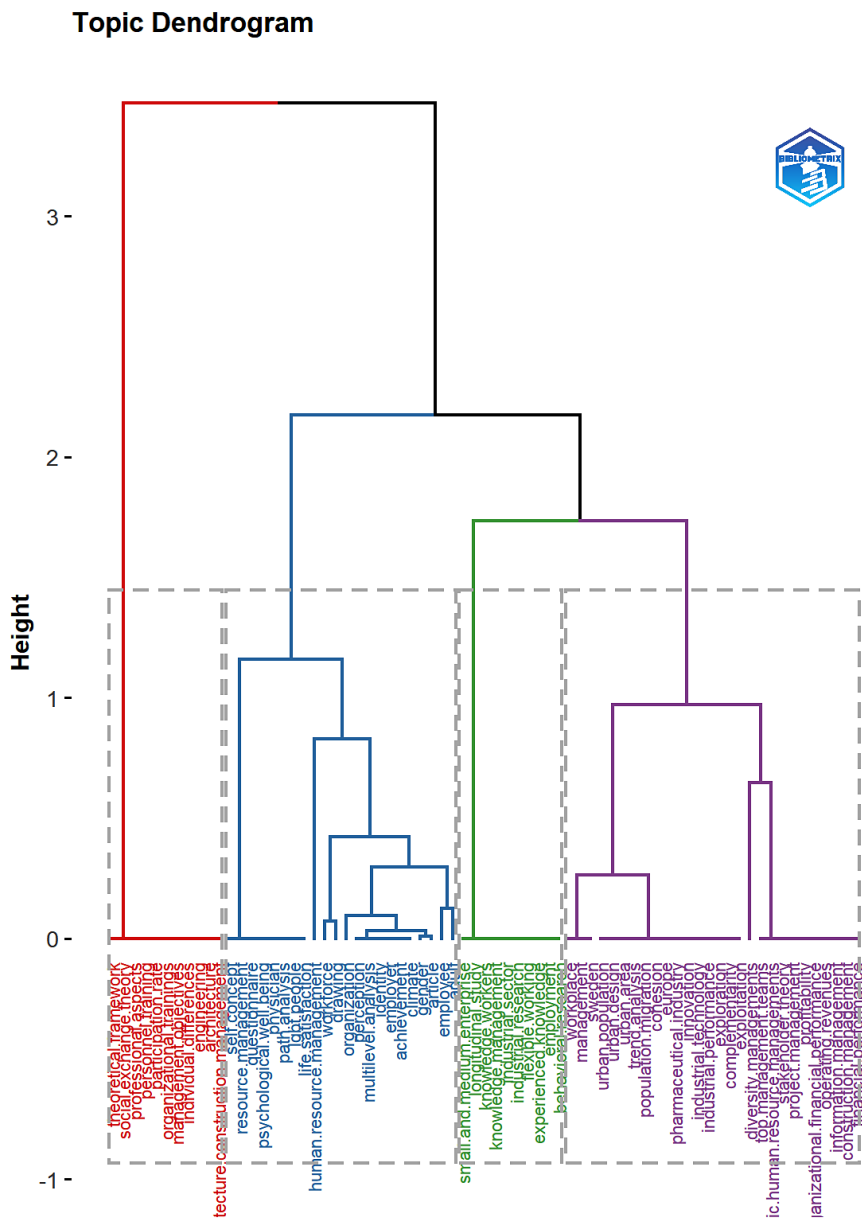
Finally, the last cluster analysed is the purple-coloured cluster, which reflects issues on globalization.

Internationalization, globalization and demographic changes have increased diversity in organizations, making it necessary for many companies to implement diversity management in business. Velinov (2018) argues that diversity management measures vary between headquarters and subsidiaries because national diversity regulations differ from country to country. Therefore, to address these issues, it is opportune that there are partakes within organizations at the corporate level to limit this gap.

The paper by Quach & Frey (2020) presents best practices for implementing diversity management and steps to be taken to increase acceptance of diversity. The results showed that top management support, awareness raising and internal communication significantly improved acceptance of diversity.

According to Batmomolin et al. (2022), diversity management positively affects organizational trust, innovative employee behaviour and employee engagement. Organizational trust has a positive effect on creative employee behaviour and employee involvement, and it mediates the impact of diversity management on innovative employee behaviour and employee involvement.

**Figure 4.** Topic dendrogram



Source: Authors' elaboration using Bibliometrix



Diversity management is essential for organizations today because it promotes trust, creates innovative employee behaviour, and strengthens employee engagement. Every organization must establish policies related to diversity management practices.

Businesses can reap numerous benefits from investing in Diversity Management: in a society of continuous change, it is possible to produce a significant increase in the commitment of workers and all other stakeholders who interact with the organization, such as shareholders, customers and institutions, towards a company that promotes equality and diversity as the founding values of the organization. Good personnel management can ensure that the company gains access to new groups of workers, attracts the best resources, and reduces turnover costs and absenteeism rates resulting from employee dissatisfaction. Having workers who feel comfortable and free to express their potential in the workplace leads to increased work motivation, but, even more importantly, to a constant increase in business efficiency and productivity.

## Discussion and conclusions

Since the publication of the 2030 Agenda by the United Nations, numerous scholars have initiated research intending to foster environmental, social and governance sustainability (Pizzi et al., 2020; Stevens & Kanie, 2016). Businesses have to play a critical role in communicating social and governance aspects to their stakeholders (Hirons, 2020; Scheyvens et al., 2016). Therefore, this paper aims to describe the different strands of research on diversity management to rationalise the concept and help slow down the spread of distorting practices such as pinkwashing and social washing (de Gennaro & Piscopo, 2023; Rizzi et al., 2020). Following a rigorous methodology widely recognised in the academic literature (Massaro et al., 2016; Paul et al., 2021), in the present study a sample of 124 peer-reviewed papers published between 2015 and 2022 were analysed. The annual growth of research in the field is 13.69%, demonstrating that the trend in academic literature is increasing

attention to diversity management. In this sense, the objective of this section is to provide a timely research agenda to foster knowledge growth in a structured manner and answer the third research question (Paul & Criado, 2020). Since scientific collaboration represents one of the pillars for the proliferation of a topic in modern science, the geographical study of collaborations has allowed us to investigate similar patterns of approach to diversity management among different nations. In particular, the results highlight similar regulatory practices among Scandinavian countries regarding gender equality (Brescia et al., 2021). Furthermore, the evolving role of the UK following the Brexit is emphasised. The UK had to deal with the social unrest caused by the abrupt change in regulations in terms of access to land, which resulted in the absence of ready equal opportunity policies.

Through thematic analysis and topic dendrogram, it was possible to distinguish four different triggers for studies on diversity management and biased communication. The first cluster concerns theories and fields of application. In this sense, the academic literature has focused on using exchange theory (Calandra & Lanzalonga, 2021) to foster inclusive workplaces that do not discriminate based on orientation and allow open discussion of beliefs and values instead of avoiding such conversations in social interaction. Therefore, it is understood how social exchange relationships can influence managers' perceptions of diversity management (Nachmias et al., 2022). The second research strand identified through the analysis relates to the role of employees, management and diversity management in the corporate environment. In particular, studies in this domain aim to define the characteristics of the diversity manager. According to Köllen (2022), the diversity manager's virtue-based and rule-based perspective on diversity management makes most initiatives uniform and empowers employees. The literature emphasises the outdated correlation between good management and performance, identifying staff knowledge and integration as good practices for business administration (Albert & Lazzari Dodeler, 2022). Despite the increase in non-financial communication (Bondarenko et al., 2020), disclosure, authenticity and the centrality of one's work identity appear neglected in internal corporate policies. Deepening the cognitive and social dynamics within managerial procedures is a pillar to avoid

communication distortions such as social washing and pinkwashing. The third cluster identifies identity and role issues in social sustainability. Institutional reforms, inclusive recruitment policies and the transformation of individual attitudes drive change and the flourishing of social sustainability (Worsham et al., 2021). Among the various social barriers that limit the growth of gender equality, the family dimension related to women's ability to have children stands out. Adopting diversity management policies implies a cultural change that challenges traditional systems promoting similarity and homogenisation. Work-life balance concerns all organisational actions to balance employees' care and work time who are increasingly involved in both family and business activities. Exogenous factors such as the Covid-19 pandemic have accelerated the smart working process for many entities by favouring a reduction in travel and balanced leisure and work time (Harrison et al., 1998). Employees should be provided with the most favourable working conditions to allow equilibrium and reduce communication distortions (Ahmed et al., 2020). The last cluster deals with the topic of diversity management linked to globalisation. In particular, the research stream assumes that internationalisation and demographic changes increase diversity in organisations, making it necessary for many companies to implement diversity management in their business. The approach to social sustainability in business needs to have two phases. On the one hand, a top-down approach is needed to foster awareness and internal communication to significantly increase the acceptance of diversity (Quach & Frey, 2020). On the other hand, the bottom-up approach enables the proliferation of organisational trust and fosters employee involvement and inclusion concerning diversity management (Batmomolin et al., 2022).

This paper has several theoretical implications. Firstly, it enhances knowledge of diversity management by exploring the numerical dimension of the number of publications and journals of reference. Secondly, it explores diversity management by emphasising the domination of communication bias and discouraging fallacious disclosure by providing higher academic knowledge about the explored research strands. Finally, it refines the link between social sustainability and the individual by identifying social exchange theory as a helpful tool to explain the ongoing changes in corporate governance.

This study aims to provide implications for managers and policymakers. Firstly, the research emphasises the predominant role of social equality in international policies. Managers should integrate social policy-related indicators into their evaluation plans based on social factors. Secondly, the research provides information on different approaches to inclusive diversity governance. In order not to pursue fallacious communication paths that lead to social washing and pinkwashing biases, managers should favour a mixture of governance approaches. In particular, the top-down approach favours change in corporate vision and mission. However, the bottom-up approach materialises change in a staff initiative that fosters effective employee inclusion. Thirdly, the importance of the hybrid work approach to foster employees' work-life balance is emphasised.

Like any other research, this study has its limitations. Social washing and pinkwashing are used with different meanings, which may reduce the accuracy of the results. Using the Scopus database alone could result in the loss of results from other databases such as the Web of Science.

Finally, this research aims to provide a research agenda on the topic. Based on the identified clusters, future researchers should investigate the topic of fitting theories for explaining the phenomenon of diversity management. In particular, other authors should explore stakeholder perceptions by applying stakeholder theory. Furthermore, interdisciplinary studies could foster understanding of identity and gender issues to increase managers' knowledge of diversity. The third cluster suggests important future research avenues related to different approaches to work. More personalised approaches to work could result in an increase in employee performance, and enhance the ability to integrate various social and identity factors. In this sense, quantitative methodologies are suggested to explore the correlation between work performance and work-life balance. As far as globalisation is concerned, future studies should emphasise the differences in diversity management between companies with national and multinational sectionalization. In this vein, scholars could expand knowledge on the topic by elaborating multiple case studies to highlight recurring diversity management patterns.

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# Audit Committee's Characteristics and the Cost of Debt

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## ABSTRACT

**Objective:** This paper examines the association between audit committee characteristics and the cost of debt, with the aim of gaining new insights on how this corporate governance mechanism contributes to the reduction of debt costs.

**Methodology:** Using a sample of FTSE 100 companies listed in 2018 and 2019, our study investigates how audit composition and characteristics, such as financial and industry expertise, gender, tenure and diligence affect audit committees' oversight role, and therefore the impact on the companies' level of risk and the cost of debt.

**Findings:** The results show that overall audit committee's characteristics do not impact the corporate cost of debt, except for the gender of the audit committee's chair. Companies with audit committees managed by a chairwoman experience a lower cost of debt. The results also confirm that external auditors influence the cost of debt. As additional test, we conducted a principal component analysis to construct a corporate governance index of audit committee's characteristics, and we obtained similar results. Overall, the study results seem to suggest that the cost of debt is more significantly influenced by external auditors than by the characteristics of the audit committee.

**Value Added:** This paper contributes to the literature on corporate governance by showing how audit committees characteristics affect the cost of debt.

**Recommendations:** This study improves the understanding of the way debtholders may assess audit committee's characteristics and auditors when assessing companies' financial risk and the corporate cost of debt.

**Key words:** audit committee's characteristics, auditors, cost of debt, corporate governance.

## Introduction\*

The existing literature has been providing evidence that audit committees play a key role in overseeing financial reporting and monitoring the external audit process with an impact on financial reporting quality (Abbott et al., 2003; Dao et al., 2013). The role of audit committee (AC) as a corporate governance mechanism has been gaining interest among regulators and investors with the aim of understanding which AC characteristics lead to a reduction in information asymmetries with positive consequences on the financial reporting process (Bilal et al., 2018).

Considering that one of the main elements used by creditors to assess companies' financial capacity and viability are financial reports, it can be expected that from a creditor's viewpoint all the factors that influence financial reporting quality are of great concern as far as their valuation is concerned. In this context, knowing the AC attributes that influence the quality of financial reporting will be of great value to creditors in determining debt costs (Anderson et al., 2004).

The existing research provides evidence that good corporate governance is related to lower cost of equity and lower cost of debt (Zhu, 2014). By reducing agency conflicts between the company and creditors, corporate governance mechanisms may contribute to lower debt costs. Lorca et al. (2011) provide evidence that board activity, director ownership and board size are the attributes that contribute to reducing the cost of debt. Andersen et al. (2004) conclude that the cost of debt is inversely associated with board independence and board size. Dao (2013) shows that the cost of equity is lower for companies with higher average AC members' age.

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However, due to its role in providing active monitoring of the financial reporting process and external auditor process, the study of the attributes of AC has been gaining increasing interest of regulators and supervisors. The Securities and Exchange Commission, the Financial Accounting Standards Board, and the major stock exchanges frequently emphasize the role of the board of directors in overseeing the financial accounting process (Anderson et al., 2004). According to the Financial Reporting Council (FRC) (2016), the code provision (C.3.1) requires the board to establish an AC, which is a sub-committee of the board that mostly encompasses nonexecutive directors responsible for the oversight of reliable financial reporting and a credible audit function (Shah & Napier, 2017). The AC's mission is to apply the board's internal control principles and to maintain an appropriate relationship with the company's auditors (FRC, 2016).

According to the FRC, and as elaborated by the United Kingdom (UK) Governance Code, the AC should: guarantee the integrity of the financial statements, reviewing significant financial reporting judgments contained in them; review the company's internal control and risk management systems and the effectiveness of the company's internal audit function; make recommendations to the board to get the approval of the shareholders during the general meeting. Furthermore, its role should assure the external auditor's independence and the objectivity and effectiveness of the audit process, always based on the policy implemented in the UK (FRC, 2016). Many studies consider the implementation of an effective AC as essential for driving professionalism to the improvement of financial reporting quality (Velte, 2017; Weber, 2020; Sulaiman, 2017; Qu, 2020). The monitoring and advisory-related function of ACs are of great importance in reducing information asymmetries between management, supervisory board and shareholders, and it has the ultimate board-level responsibility for financial reporting oversight (Archambeault et al., 2008). Lorca et al. (2011) concluded that as a structure of the corporate governance, a greater AC effectiveness can result in a lower cost of debt for the companies due to reduced agency problems and the reduction in information asymmetry.

Previous studies have specifically addressed the effect of the composition of the Board of Directors on the cost of debt financing (Anderson et al., 2004;

Lorca et al., 2011) and those results are consistent with the argument that debtholders consider board monitoring effectiveness as a source of greater assurance concerning the integrity of accounting numbers, thus improving the financial accounting process. Cotter and Silvester (2003) find evidence that independent directors on the AC reduce the monitoring by debtholders when leverage is low. The corollary is that executives on the AC lead to increased monitoring by debtholders.

Fewer studies have addressed the relationship between audit committees' composition and characteristics and the cost of debt. Therefore, this study aims to fill this gap by investigating the effect of different attributes of the AC on the cost of borrowing. We expect that AC characteristics such as financial and industry expertise, gender, tenure and diligence affect audit committees' oversight role, and therefore impact the companies' level of risk and the cost of debt.

To conduct the analysis, a sample of FTSE 100 companies listed in 2018 and 2019 was used.

The UK has a global reputation for having high standards of corporate reporting, auditing and governance. The UK Corporate Governance Code aims to ensure high-quality corporate governance that should be fulfilled by the AC as a promoter of audit quality in the UK (FRC, 2016).

This research contributes to the literature in several ways. Firstly, it investigates the relationship between the attributes of the AC and their impact on the corporate cost of debt. Although the cost of debt is an important factor to a company's performance and value, the consequences of corporate governance mechanisms on debtholders' perspective have been less studied. Secondly, the research can help regulators and supervisors by providing information about the effectiveness of AC's attributes as a corporate governance mechanism. Finally, our study improves the understanding of the way debtholders may assess AC characteristics and auditors when assessing companies' financial risk and the corporate cost of debt.

The remaining part of the paper proceeds as follows: Section 2 provides the literature review, where the focus is on the AC characteristics and their possible impacts, and the hypotheses are developed. Section 3 presents the research

design, while Section 4 describes the sample and the data. In Section 5, the results and findings are discussed. Finally, in the last section the main conclusions are presented.

## Literature Review and Hypothesis Development

Previous studies show that the effectiveness of the oversight corporate governance mechanisms may play an important role in constraining managerial opportunism and improving the quality of financial reporting (Anderson et al., 2004; Lorca et al., 2011). More effective oversight mechanisms may reduce companies' risk and, consequently, reduce the risk premium and the corporate cost of debt.

ACs are an important corporate governance mechanism, protecting shareholders' interests and overseeing the external audit process. In the UK, the revised Combined Code (2012) endorsed that the AC should comprise a minimum of three members; all members should be independent non-executives; at least one member should have recent and relevant financial experience; and AC should meet at least four times per year.

### *Financial and Industry Expertise of Audit Committee*

The financial background of board members represents one of the most widely investigated attributes that are of interest to regulators. Zalata et al. (2018), Abbot et al. (2003) and Abbot et al. (2004) studied the impact a financial expert may have in different areas, such as earnings management, audit fees and the occurrence of financial reporting restatements, and they found that the financial reporting quality is higher when AC members have more financial expertise. Ghafran & O'Sullivan (2017) argue that greater levels of financial expertise in the AC are a synonym for demanding higher audit fees. Nevertheless, according to the author, it is unquestionable that the knowledge on AC will enhance reports' quality. Weber (2020) appends the fact that high levels of financial

expertise and advanced educational backgrounds tend to increase companies' earnings quality, and it may reduce information asymmetries between management, supervisory board and shareholders, contributing to improving the financial reporting quality.

According to FRC (2016), at least one AC member should have recent and relevant experience in preparing and auditing financial statements and accounting for accruals, estimates and reserves. Abbot et al. (2004) argued that AC members who possess financial literacy/expertise provide additional support for external auditors when discussing accounting issues and disagreements with management. Therefore, it is expected that greater AC financial knowledge will result in a reduced amount of financial misstatement and, therefore, in a higher quality of financial reporting.

Among the AC members, the chair is of special relevance. According to the Guidance on AC (FRC, 2016), the AC chair decides on the frequency and timing of AC meetings and keeps in touch on an ongoing basis with key people in the companies' governance. Additionally, AC chairs are encouraged to report personally in their annual statements how the principles relating to the role and effectiveness of the board have been applied. It will bring clearer context for the investors so they will be willing to accept explanations when a company chooses to justify their provisions (FRC, 2016). Sulaiman (2017) suggests that the effectiveness of AC is influenced by the knowledge and understanding of financial reporting and auditing.

Lary and Taylor (2012) developed a financial expertise score to better qualify the chair's financial expertise. The authors incorporated previous experience in a BIG4 company as a component of this score, as they argued that such experience contributes to a more comprehensive preparation. Furthermore, there is a lot of evidence that BIG4 auditors deliver higher audit quality in the reports due to their associated credibility (DeFond & Zhang, 2014). As a result, it may be expected that an AC chair that had already worked in a BIG4 will perform a more effective oversight. A more effective oversight will tend to reduce companies' financial risk and, consequently, reduce the corporate cost of debt.

Regarding the industry expertise, Cohen et al. (2014) argued that AC industry knowledge is valuable because accounting guidance, estimates and



oversight of the external auditor are often linked to a company's operations within a particular industry. Hence, industry expert audit committee members who understand industry's complexities and risks might communicate more effectively with the auditor. Moreover, industry experts on the AC are likely to be in a better position to understand the nature of industry-specific audit effort required to assure the quality of the financial reports.

In contrast, Brazel & Schmidt (2019) proposed that ACs with industry-expert chairs are more likely to be associated with large inconsistencies than those without, arguing that AC chairs with more experience in the industry can use their specific knowledge as well as their oversight attributes over the external auditor's activities to influence audit adjustments that eventually increase fraud risk. The AC chair may also play a ceremonial role in the interaction with the external auditors and the management (Beattie et al., 2015), being unable to challenge adequately the auditors and the management.

Considering the above arguments, a positive effect of the financial expertise of the AC chair on the corporate cost of debt is anticipated, i.e. companies whose AC chair has greater financial expertise will be associated with a lower risk and thus a lower corporate cost of debt. It is also predicted that there is an association between the industry expertise and the corporate cost of debt.

**H1 a)** *There is a negative association between the level of financial expertise of the AC chair and the corporate cost of debt.*

**H1 b)** *There is an association between the level industry expertise of the AC chair and the corporate cost of debt.*

### **Tenure of Audit Committee Chair**

As mentioned before, there is considerable research concerning AC, its influence on the company and its responsibilities. Qu (2020) studies the specific 'styles' of AC members and chairpersons. These 'styles' are defined as individual characteristics inherent of each member, and they may affect the financial

reporting choices. The author claims that these 'styles' are a good tool to measure the independence from the company and, if they do not harm the company, they should be preserved. The legislation requires that AC's members should maintain some independence from the company in order to provide the best results. Unquestionably, independent ACs provide more reliable accounting information when compared to insider-stacked committees (Qu, 2020). Anderson et al. (2004) confirm that AC composition influences the financial accounting process, and may have an impact on the level of companies' financial risk. Therefore, it may be concluded that corporate debt yields will exhibit an inverse relation to AC independence. Consequently, independent ACs are associated with a significantly lower cost of debt financing.

If audit committee members were completely separated from management, it could mean that the independent AC members would see fewer industry issues and would be more likely to side with the auditor, requiring fewer negotiations and deliberations and thus fewer meetings, impacting the level of monitoring.

Tenure is a factor that may influence independence in a positive or negative way. The longer the tenure someone has, the less independent the chair becomes and the higher is the probability of the chair's behaving like an inside director (Qu, 2020). This raises the question as to whether the chair's tenure should be restricted in the same way as that of the lead auditor. Nevertheless, Sharma et. al. (2011) also consider that the longer the tenure, the better the knowledge of the company and thus better results. Based on the argument that tenure reduces independence (Qu, 2020), the independence of an AC on the basis of the tenure of the AC's chair has been measured.

Considering those opposite arguments, the signs of the relationship between the tenure of the AC's chair (and consequently the independence that the AC is associated with) and the cost of debt financing the company will present cannot be anticipated. The following hypothesis is formulated, without making the direction of such influence explicit:

**H2)** *There is an association between the tenure of the AC chair and the corporate cost of debt.*

## ***Frequency of Audit Committee Meetings***

The Treadway Commission (1987) recommends the frequency of at least four AC meetings per year (consistent with the reviews of quarterly financial statements). Meeting frequency may indirectly provide information on the value of AC monitoring of quarterly statements and their diligence in carrying out their responsibilities (Abbot et al., 2003). Abbot et al. (2004) stated that if quarterly meetings are associated with greater audit committee diligence in their monitoring duties, then we expect quarterly meetings to be associated with a lower level of misstatement, and thus better quality reports and lower corporate costs of debt. Aldamen et al. (2012) agree with the claim, mentioning that the proper number of meetings can potentially have a positive impact on the company's performance.

According to Abbot et al. (2004), an AC comprised solely of independent directors and meeting quarterly would be more willing to confront management about financial reporting matters and thus exhibit fewer incidents of financial reporting misstatements. Hoque et al. (2013), Mangena & Taurigana (2008), and Munro & Buckby (2008) also found that AC that meets more regularly tends to be more effective in its oversight role. Therefore, it is predicted that a higher frequency of AC meetings will tend to increase the effectiveness of the oversight and therefore reduce the companies' financial risk and the corporate cost of debt:

***H3)*** *There is a negative association between the meeting frequency of the AC and the corporate cost of debt.*

## ***Gender in Audit Committee***

The presence of women in the ACs has also become a new topic during the last years. Qu (2020) provides evidence that women are more risk-averse than men, and men exhibit higher levels of overconfidence when compared to women. The social-psychological literature emphasizes the gender differences in optimism about future economic outcomes, and finds women less confident and more conservative in making financial decisions. Byrnes et al. (1999) add that

men are more likely to be involved in 'risky experiments', 'intellectual risk taking' and 'gambling' than women. Zalata et al. (2018) have demonstrated that an increased presence of female experts on the audit committee leads to a significant reduction in earnings management. This finding highlights the positive impact of women in the role of AC members.

According to Abbott et al. (2004) and Bédard et al. (2004), AC female financial experts are expected to have a more pronounced effect on earnings management than their male counterparts. Adams & Ferreira (2009) argue that since women directors do not belong to the 'old-boy' networks, they are more likely to provide most substantial oversight, monitoring, and an unbiased way of thinking as independent directors.

The current research provides only limited and inconsistent evidence regarding the economic impact that higher female representation in AC might bring to the company. Based on the opinion of Qu (2020), it is predicted that companies with female AC chairs tend to be associated with a lower financial risk and, consequently, a lower corporate cost of debt. Therefore, the following hypothesis is formulated:

**H4)** *There is a negative association between the fact of the AC chair being a woman and the corporate cost of debt.*

### **Auditor Tenure and Audit Fees**

The concept of 'Big N research' has been extensively investigated in the literature in recent years (DeFond & Zhang, 2014; Pittman & Fortin, 2004). The auditor size proxied by 'Big N firms' has been consistently linked in the literature to higher quality audits. Pittman & Fortin (2004) state that choosing a bigger auditor firm reduces debt monitoring costs by enhancing the credibility of financial statements; hence, it enables companies to lower their interest rates. Based on this argument, it may be expected that audit firm size may lower the corporate cost of debt, reducing it as a result of the credibility that the audit firm has in terms of financial transparency and reliability with creditors. Since this study's sample includes only BIG4 audit firms, it is not considered as a hypothesis.

Nevertheless, 'Big N firms' are associated with higher audit fees. Yang et al. (2018) claim that the audit fees are significantly and positively related to the firm-specific financial, strategic and operational risks, indicating the informativeness of corporate textual risk disclosures. This means that higher audit fees are linked with higher informativeness of risk that the audit firm is associated with. Accordingly, beyond this argument, it may be expected to cause a higher corporate cost of debt when facing creditors, since creditors are more aware of the risks the company is associated with; thus, they ask for higher fees.

Board tenure captures the ability of managers to influence directors, so longer tenure potentially permits managers to have a greater influence over directors' decisions (Brickley et al., 1994). The same is expected to occur with auditors. According to Tepalagul & Lin (2015), there are two opposing views on the effects of auditor tenure on audit quality. According to the first one, as the auditor-client relationship prolongs, the auditor may establish a close relationship with the client and become more likely to act in favour of the management, thusly reducing audit quality. This view supports mandatory audit partner rotation. In the second view it is claimed that as the auditor's tenure lengthens, auditors increase their understanding of their clients' business and develop their expertise during the audit, which results in higher audit quality. Singer & Zhang (2018) find that longer audit firm tenure may lead to less timely detection and correction of misstatements, which is consistent with a negative effect of long auditor tenure on the audit quality. This fact addresses the benefit of a fresh look by a new auditor. According to the author, the negative association between auditor tenure and timely discovery of misstatements is predominant in the first ten years of an audit engagement (Singer & Zhang, 2018). Since there is no consensus on the literature, the question of which impact may be stronger when affecting the borrowing cost will be examined. It leads to the formulation of the following hypotheses:

**H5)** *There is a positive association between audit fees and the corporate cost of debt.*

**H6)** *There is an association between auditor tenure and the corporate cost of debt.*

## Research Design

In accordance with the previous literature on the topic, we use the following pooled OLS model to examine the association between the audit committee's characteristics and the cost of debt presented by companies:

$$\begin{aligned}
 COD_{i,t} = & \beta_0 + \beta_1 WBIG4_{i,t} + \beta_2 INDEXP_{i,t} + \beta_3 AGECHAIR_{i,t} + \beta_4 MEETFRE- \\
 & Q_{i,t} + \beta_5 WCHAIR_{i,t} + \beta_6 AUDFEE_{i,t} + \beta_7 AUDTENURE_{i,t} + \beta_8 LEV_{i,t} + \beta_9 FIRM- \\
 & SIZE_{i,t} + \beta_{10} INTCOV_{i,t} + \beta_{11} LOSS_{i,t} + \beta_{12} I.SECTOR_{i,t} + \text{year controls}_{i,t} + \varepsilon_{i,t}
 \end{aligned}
 \quad (1)$$

Where *COD* is the cost of debt calculated on the basis of the ratio between total interest cost incurred and the average debt of each company during the last four years of the sample period (Khemakhem & Naciri, 2013). *WBIG4* measures AC chair's financial expertise and it is a dummy variable that equals one if the AC chair had already worked in a BIG4 company and zero otherwise (Lary & Taylor, 2012). *INDEXP* measures the AC chair's industry expertise and it is a dummy variable that equals one if the AC chair had some industry expertise and zero otherwise (Anderson et al., 2004). *AGECHAIR* measures AC chair's tenure and it is the logarithm of the number of years of the actual duration of the current AC chair's tenure (Aldamen et al., 2012). *MEETFREQ* measures the diligence of the AC and it is the number of meetings that the AC reported in a sample year (Aldamen et al., 2012). *WCHAIR* is a dichotomous variable that equals one if the chair of the AC is a woman and zero otherwise (Aldamen et al., 2012). *AUDFEE* is the natural logarithm of audit fees (Abbott et al., 2003; Yang et al., 2018). *AUDTENURE* is the natural logarithm of the number of years of the actual duration of the current auditor's tenure (Pinto & Morais, 2019; Qu, 2020; Zalata et al., 2018).

The regression model requires the introduction of control variables that complement the model. The following elements are used as control variables: the company size – *FIRMSIZE*-, measured by the natural logarithm of total assets to capture information asymmetry and any residual risk effect (Lorca et al., 2011; Qu, 2020; Yang et al., 2018); the interest coverage ratio – *INTCOV*-,

which is calculated as the ratio of operating profit over interest expense for the period and it is used to proxy for a company's ability to service its debt (Lorca et al., 2011); leverage (*LEV*), which is calculated as the ratio of total debt to total assets (Aldamen et al., 2012; Iyer et al., 2020; Pinto & Morais, 2019); and *LOSS* which equals one if the company reports a negative net income and zero otherwise (Draeger et al., 2020; Weber, 2020; Zalata et al., 2018). We also control for industry effects with  $n - 1$  dummy variable, *SECTOR*, based on the two-digit SIC code (Aldamen et al., 2012; Lorca et al., 2011) and for year effects, introducing a dummy variable for each year.

## Sample and Data

The data apply to the UK's FTSE 100 companies in the year 2018 and 2019. Company-level financial data are retrieved from Bloomberg. All AC characteristics were hand-collected from FTSE 100 companies' financial reports.

After eliminating companies with missing independent variables, 170 observations remain in the sample examined. The sample includes large companies, as it includes only those listed on the FTSE 100 index. The companies in the sample are not highly leveraged, with debt representing on average 21% of their total assets.

Table 1 provides descriptive statistics for the variables used in our research model. It was found that the cost of debt has a mean and a median of 4.5% and 3.6%, respectively, with a standard deviation of 4.9% and it fluctuates from 0 to 48.3%. On average, the sample exhibits a debt-to-total-assets ratio (*LEV*) of 28.6%, and 6% of the companies register a negative net income. As far as the chairs of the audit committees are concerned, on average 59% of them have industry expertise, 34% have already worked in the BIG4, and 26% are women.

**Table 1.** Descriptive Statistics

<b>Panel A. Descriptive statistics for continuous variables</b>					
	Mean	Median	Standard Deviation	Min	Max
COD	0.045	0.036	0.049	0	0.483
AGECHAIR	1.078	1.099	0.049	0	2.197
AUDFEE	8.104	8.086	0.086	7.935	8.274
AUDTENURE	1.702	1.609	0.074	0	3.871
LEV	0.286	0.288	0.013	0.0003	0.83
FIRMSIZE	16.953	16.367	0.14	13.582	25.488
INTCOV	273.138	6.025	183.856	-5.095	34737.5
MEETFREQ	5.3	5	1.92	3	13
<b>Panel B. Mean, median and frequencies for dichotomous variables</b>					
	Mean	Median	No. of companies coded=1	No. of companies coded=0	
WBIG4	0.34	0	58	112	
INDEXP	0.59	1	100	70	
WCHAIR	0.26	0	44	126	
LOSS	0.06	0	10	160	

Pooled sample descriptive statistics. All variables are defined in Appendix A.

The pairwise correlations for the independent variables are presented in Table 2. The highest correlation value is 0.426 between *AUDFEE* and *FIRMSIZE*, which suggests that the tests presented have no multicollinearity concerns. The Variance Inflation Factors (VIFs) were calculated for all variables to test for potential multicollinearity\*.

\* VIF statistics for all variables are between 1.10 and 3.10.



Table 2. Correlation Matrix

	WBIG4	INDEXP	AGECHAIR	MEETFREQ	WCHAIR	AUDFEE	AUDTENURE	LEV	FIRMSIZE	INTCOV	LOSS
WBIG4	1.00										
INDEXP	0.10	1.00									
AGECHAIR	0.00	-0.04	1.00								
MEETFREQ	0.25***	0.04	-0.08	1.00							
WCHAIR	0.11	-0.12	0.01	-0.03	1.00						
AUDFEE	-0.16**	-0.13*	0.06	0.24***	-0.06	1.00					
AUDTENURE	0.00	0.01	-0.11	0.01	0.04	-0.07	1.00				
LEV	-0.18**	-0.08	0.05	-0.06	0.01	0.03	-0.03	1.00			
FIRMSIZE	0.04	-0.03	0.18**	0.31***	-0.12*	0.43***	-0.09	-0.25***	1.00		
INTCOV	0.10	0.06	0.03	0.06	-0.03	-0.06	0.01	-0.15**	0.36***	1.00	
LOSS	0.03	-0.09	0.01	-0.08	0.07	-0.10	-0.05	-0.08	-0.06	-0.02	1

All variables are defined in Appendix A.

# Empirical Results

## *Influence of Audit Committee's Characteristics on the Cost of Debt*

Table 3 shows the results delivered thanks to the application of the study model which was used to determine the impact of AC's characteristics on the cost of debt.

**Table 3.** Influence of the audit committee characteristics on the cost of debt

Independent Variables:	Coefficient	Predicted Sign	Coefficient	P-Value
Intercept	$\beta_0$	?	-0.793	0.425
WBG4	$\beta_1$	-	-0.034	0.844
INDEXP	$\beta_2$	?	0.137	0.407
AGECHAIR	$\beta_3$	?	0.005	0.969
MEETFREQ	$\beta_4$	-	0.006	0.886
WCHAIR	$\beta_5$	-	-0.435**	0.012
AUDFEE	$\beta_6$	+	0.192**	0.020
AUDTENURE	$\beta_7$	?	-0.03	0.692
FIRMSIZE	$\beta_8$	-	-0.244***	0.000
INTCOV	$\beta_9$	-	-0.001***	0.000
LEV	$\beta_{10}$	+	-0.897	0.073
LOSS	$\beta_{11}$	+	0.614	0.109
Year fixed effect			yes	
Industries dummies			yes	
No. of observations			170	
Adj.-R2			40.26%	

The table presents the results of estimating equation (1) which examines the influence of the level the audit committee characteristics on the cost of debt. A pooled OLS has been conducted. All variables are defined in Appendix A. Significance at the level of \*\*\*1%, \*\*5% and \*10%.

The findings suggest that the only AC characteristic that is value relevant for debtholders is the gender of the audit committee's chair. In line with H4, it was found that if the AC chair is a woman, the cost of debt is reduced. The coefficient

of *WCHAIR* ( $\beta_5 = -0.435$ ) is negative and statistically significant at the level of 5%. This result is consistent with prior literature which suggests that women are more conservative and have more capacity to control the financial decisions (Abbott et al., 2004; Bédard et al., 2004; Qu, 2020).

As an additional test, the same model is estimated but the *WCHAIR* variable (dummy variable equals 1 when the AC chair is a woman and 0 otherwise) is replaced by the percentage of women in the AC. In this case, the coefficient is not statistically significant. This finding emphasizes the role of the chair in the audit committee. It should be noted here that the AC chair schedules the meetings and it is the bridge between AC and the external auditors and management. As a result, women chairs seem to positively impact the cost of debt of a company, reducing its level.

Regarding industry and financial expertise, the results suggest that debtholders do not consider relevant the fact that audit committee's chair has previous experience in the same industry, or the fact that the chair has worked previously in the BIG4.

The same happens with the second hypothesis formulated. It was found that the tenure of AC chair is not related to the company's cost of debt as the coefficient for the *AGECHAIR* ( $\beta_3$ ) variable is not statistically significant. There is no evidence that the tenure of the AC chair influences the debtholders and the cost of debt.

As far as the third hypothesis is concerned, it was found that the frequency of audit committee meetings does not impact the borrowing costs, since the coefficient for the *MEETFREQ* ( $\beta_4$ ) variable is not statistically significant. This evidence is in line with the opinion of Aldamen et al. (2012) and Abbot et al. (2004).

As predicted in the fifth hypothesis made, it was discovered that higher audit fees tend to increase the corporate cost of debt. The coefficient for audit fees ( $\beta_6 = 0.192$ ) is positive and statistically significant at the level of 5%. This result confirms the outcomes of the study by Yang et al. (2018) that show that audit fees are positively related to company risks.

Regarding the last hypothesis formulated, it was found that audit tenure does not impact the corporate cost of debt, since the *AUDTENURE* ( $\beta_7$ ) coefficient is not statistically significant.

As expected, the coefficients of control variables are mostly consistent with prior literature and the predictions made. The results provide evidence confirming that

most of the control variables impact the corporate cost of debt. *FIRMSIZE* was used to measure information asymmetry and any residual risk effect. It was determined that larger companies tend to have lower cost of debt, and this conclusion follows the view of Lorca et al. (2011). Likewise, companies with higher interest coverage ratios (*INTCOV*) lead to low borrowing costs since they seem to better control the inherent risk of failure to their debtholders. Finally, profitability is measured using the *LOSS* variable and it was found that this variable is not statistically significant.

### ***Influence of AC's Characteristics Index on the Cost of Debt***

As an additional test, a principal component analysis (henceforth PCA) has been conducted in order to construct a corporate governance index of AC's characteristics. The effectiveness of the AC is measured by numerous attributes related to the characteristics of its members or using the structure and organization of the audit committee. Tarchounaa et al. (2017) highlight that the simultaneous introduction of many corporate governance variables in the model may increase the explanatory power of the model, but it can also create some confusion in its interpretation due to the interrelation between variables. The different corporate governance mechanisms may have a substitute or complementary role, which can make it difficult to draw conclusions about the impact of AC's attributes on the cost of debt (Florackis, 2005). Therefore, in order to investigate the impact of several AC's dimensions simultaneously, an AC's characteristics index was constructed using the PCA method (Tarchounaa et al., 2017).

Based on the literature review presented above, seven audit AC's characteristics were applied that the existing literature identifies as relevant in the effectiveness of the AC as a corporate governance mechanism. The variables used to construct this index are not the same as those included in the previous model for two reasons. Firstly, since industry and financial experience are measured by dummy variables, it was impossible to include these attributes in the PCA analysis. Secondly, in this analysis it is possible to include variables that are highly correlated, since PCA is used to extract the principal components which are uncorrelated from a set of inter-correlated variables.

Therefore, this analysis includes the variables described above, such as AC's chair tenure (*AGECHAIR*), auditor's tenure (*AUDTENURE*), meeting frequency (*MEET-FREQ*), and audit fees (*AUDFEE*). The gender dimension was considered with the

introduction of the percentage of women on the audit committee (WACR). In addition to these variables, also the number of members of the AC (NAC) and the non-audit fee of the external auditor (NAUDFEE) were introduced to the analysis.

As already mentioned, the PCA method provides weights for each corporate governance attributes rather than using arbitrary or equal weights in the corporate governance index. Table 4 presents the weights of individual corporate governance variables in the whole corporate governance index for the three sub-samples and the full sample of US commercial banks for each year, from 2000 to 2013, as well as for the entire period.

All factors with an eigenvalue equal to 1 or greater have been retained, which results in 3 factors that explain about 60% of the total variance in the original data. This solution is then rotated using orthogonal varimax (Larcker et al., 2007).

Table 4 shows the variables that are associated with each factor and have a loading that exceeds 0.50 in absolute value. Each of the 3 factors was named according to the variables that are related to the factor. The first factor is related to auditors' fees, and thus it was named 'Auditors'. The second factor is associated with the composition of the AC in terms of the number of AC's members and the percentage of women in the AC; therefore, it was named 'Composition'. The last factor is related to the chair's and auditor's tenure, and it is named 'Tenure'.

**Table 4.** Exploratory principal components analysis

	<b>Auditors</b>	<b>Composition</b>	<b>Tenure</b>
AGECHAIR	-0.182	0.045	-0.569
MEETFREQ	-0.419	0.075	0.378
AUDFEE	0.620	-0.197	0.017
AUDTENURE	0.048	-0.144	0.718
WACR	0.119	0.665	-0.001
NAC	0.085	0.699	0.128
NAUDFEE	0.619	0.045	-0.001

Factors are calculated using PCA, retaining all factors with an eigenvalue equal to 1 or greater. This table presents the loadings on audit committee's characteristics for each factor. Loading that exceeds 0.50 in absolute value has been retained. All variables are defined in Appendix A.

When using the scores calculated for each of the three factors, the model (equation 1) was estimated by replacing the AC's variables with the three factors. Table 4 presents the results of this analysis.

**Table 4.** Influence of the audit committee characteristics index on the cost of debt

<b>Independent Variables:</b>	<b>Coefficient</b>	<b>Coefficient</b>	<b>P-Value</b>
Intercept	$\beta_0$	0.936	0.516
AUDIT	$\beta_1$	-0.279***	0.007
COMP	$\beta_2$	-0.072	0.299
TENURE	$\beta_3$	-0.031	0.609
FIRMSIZE	$\beta_4$	-0.253***	0.000
INTCOV	$\beta_5$	-0.002***	0.000
LEV	$\beta_6$	-0.760	0.123
LOSS	$\beta_7$	0.235	0.360
<hr/>			
Year fixed effect		yes	
Industries dummies		yes	
No. of observations		170	
Adj.-R <sup>2</sup>		44.99%	

This table presents the results of estimating equation (1), replacing audit committee's characteristics with the factors calculated using PCA: (1) AUDIT which includes audit fee and non-audit fee; (2) COMP which includes the number of audit committee members and the percentage of women in the committee; and TENURE which includes chair and auditor tenure. All variables are defined in Appendix A. Significance at the level of \*\*\*1%, \*\*5% and \*10%.

Findings show that debtholders attribute greater importance to external factors, such as external auditors' fees, suggesting that the importance of the AC is closely related to its role in monitoring the external audit process. The coefficients of audit committee composition and tenure are not statistically significant, indicating that these characteristics are not value relevant for creditors.

## Conclusions, Limitations and Further Research

The main objective of this research is to analyse the impact that some AC characteristics may have on the corporate cost of debt for companies belonging to the FTSE100. A sample of 100 companies has been used to study the relationship in 2018 and 2019. The findings offer new insights into these associations in an institutional context that greatly differs from those of the countries considered in the previous literature, particularly the US context (Anderson et al., 2004; Khemakhem & Naciri, 2013).

Unlike in the previous research in other countries, ACs' characteristics do not seem to impact the corporate cost of debt, with one exception: the AC chair's gender. The chair of the AC is responsible for ensuring that AC meetings run efficiently, managing the AC's agenda and making sure that each item is thoughtfully discussed and challenged by all members of the AC (Aldamen et al., 2012). Furthermore, the AC chair is the first point of liaison with the external auditor and the management, and gender appears to matter as far as the chair is concerned. According to the literature, women seem to be more prudent and more conservative (Abbot et al., 2004; Brynes et al., 1999; Zalata et al., 2018), which positively impacts the banks and the debtholders, reducing the corporate cost of debt.

External auditors also seem to influence the corporate cost of debt through their audit fees. The study results suggest that debtholders care more about external auditors than internal corporate governance mechanisms, in particular the AC. Regarding AC characteristics, debtholders seem only to mind the AC chair, maybe due to the chair's close relationship with the external auditor.

The results have certain inherent limitations related to the measurement of the AC characteristics variables used. As far as the presence of an industry expert within the AC is concerned, the study measure is established based solely on the requirement of the chair's industry expertise in his/her entire career. This allows us to obtain only some subjective information on industry expertise of AC members: firstly, it is based solely on the AC chair's industry expertise, and secondly, it is the AC chair's expertise in the industry s/he worked in that is considered, but the fact is that even if the chair had worked in that

industry before, it does not necessarily mean that s/he is an industry expert. Therefore, it may explain the fact that no relationship was found between the presence of industry expertise in an AC and the corporate cost of debt.

The measure of the cost of debt used in this research is one of the most frequently used in the literature (Anderson et al., 2004; Khemakhem & Naciri, 2013; Lorca et al., 2011). However, a significant drawback of this measure is its reliance on accounting figures, which can introduce inherent biases associated with accounting information. Attempts have been made to address this issue by incorporating control variables, but there remains a possibility of certain gaps in the interpretation of the results.

As already mentioned, the sample is based on the data concerning UK companies since the UK has a global reputation of having high standards of corporate reporting, auditing and governance. Nevertheless, the extension of the scope of this study to other countries would be valuable in terms of diversity and comparison. Finally, the present study has been conducted for only slightly over two years. Extending the research period would make it possible to obtain a better perspective on the changing characteristics of the AC and the financial benefits of these changes.

This study contributes to the literature on AC characteristics and their association with the cost of debt by adding a topic that is not sufficiently explored and measured. It also contributes to the concerns of credit agencies, since they are worried about how governance could improve the company's financial position and leave debtholders not so vulnerable to losses. In addition, this field of research will provide companies with a more refined sense of how companies' cost of debt might be affected by the composition, attributes and operation of the oversight mechanisms, both internal and external. The present paper also has managerial implications, providing some light into the way in which debtholders may assess AC characteristics and auditors when considering the company's cost of debt.

In future studies, it is suggested to extend the analysis to other AC characteristics, such as AC size or financial and industry experts in the entire AC. Moreover, it is recommended to analyse more years in the study, as well as to add the data from various countries in order to examine if the conclusions remain the same.



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## Appendix A. Variable Definitions

Variables	Definition
COD	Ratio of total interest expenses to total debt.
WBIG4	Dummy variable that equals one if the AC chair has already worked in a BIG4 and zero otherwise.
INDEXP	Dummy variable that equals one if the AC chair has industry expertise and zero otherwise.
AGECHAIR	Natural logarithm of the number of years of the actual duration of the current AC chair's tenure.
MEETFREQ	Natural logarithm of the number of meetings that the AC reported in the sample year.
WCHAIR	Dummy variable that equals one if the AC chair is a woman and zero otherwise.
AUDFEE	Natural logarithm of the audit fees.
AUDTENURE	Natural logarithm of the number of years of the actual duration of the current auditor's tenure.
LEV	Ratio of total debt to total assets.
FIRMSIZE	Natural logarithm of the total assets.
INTCOV	Ratio of operating profit to interest expense.
LOSS	Dummy variable that equals one if the company reports negative net income and zero otherwise.



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# The Efficiency of Sustainability Engagement Reported by Banks in Poland, Croatia and Romania

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## ABSTRACT

**Purpose:** This study aims to verify the efficiency of economic, organisational, social and environmental dimensions of sustainability performance.

**Methodology:** Disclosure analysis and 2-stage data envelopment analysis (DEA) examining the efficiency of sustainability engagement of listed banks in Poland, Croatia, and Romania disclosed in the annual and CSR/sustainability reports for 2015–2018.

**Findings:** There are apparent differences between the efficiency of sustainability engagement in the banking sectors of the three countries examined in the study. Banking sectors in all these countries are on different stages of their paths to value creation via the efficiency of sustainability engagement.

**Practical implications:** The results of this study may help compare sustainability engagement and understanding of the further directions of sustainable development in the banking sector in both the analysed and other countries, as well as in other institutions from other sectors. These results may be important for the decision-makers in determining the actions focused on improving efficiency on the way to value creation.

**Originality/value:** Since only a limited number of studies examine the efficiency of sustainability engagement, especially in CEE countries, little is known about value creation, understood as the efficient use of the resources and activities concerning sustainability. This paper contributes to filling in this gap. It also proposes an alternative approach, analysing the relationship between sustainability engagement and value creation based on efficiency rather than on the direct impact on financial results giving ambiguous results. This approach may be extended to different sectors and other countries.

**Key words:** CSR/sustainability, efficiency, banks, value, CEE, 2-stage DEA

## Introduction

De Villiers and Maroun (2018) argue for a future where the integration of sustainability and socially and environmentally responsible action are taken-for-granted prerequisites for any successful organisation. In the light of this, organisations have to legitimise their actions and the use of their resources; they are expected to consider their stakeholders' information needs and better explain the value they create over time for the societies in which they operate. Corporate sustainability reporting is a clear signal and manifesto of enterprises' achievements in implementing sustainable development principles as their core mission and approach to value creation. Sustainability/CSR reporting influences a company's value (Cahan et al., 2016). Moreover, sustainability reporting discloses the information that allows for the analysis of the resources use and activities efficiency; therefore, it may help understand value creation. Value creation is determined by the efficiency of resource utilisation and the organisations' activities (Penrose, 1959; Prahalad & Hamel, 1990). Stakeholder confidence is based on the three pillars of efficiency concerning sustainability: economic and organisational, social, and environmental ones.

This paper presents the results of an empirical study of corporate sustainability reporting regarding efficiency, conducted in the banking sector. As the



results of previous research concerning the relationship between corporate social performance (CSP) and corporate financial performance (CFP) give ambiguous results (e.g. Griffin & Mahon, 1997; Wang et al., 2016), this paper proposes an alternative approach to the understanding of the impact of CSP on value creation. The main thesis of this work is that instead of the analysis concerning the direct impact of CSP on financial results, it may be worth understanding the efficiency of sustainable engagement following the notion that in order to create value, the activities and resources' consumption must be efficient. Therefore, in this paper it is assumed that to 'judge' the organisations and to take decisions based on the stakeholders' perspective, it is crucial to analyse and understand the efficiency that translates into value creation. Following this notion, the research question of this study is:

*RQ:* What is the efficiency of the sustainability engagement reported by the banks in three CEE counties?

In this study, the financial inputs and economic and organisational, as well as social and environmental performance of the public banks in Poland, Croatia and Romania have been analysed. The period of research is 2015–2018. This study is based on the information provided by the banks in Poland, Croatia and Romania in their annual reports, as well as in their sustainability/CSR reports, whenever they were available. The website content of these banks was also analysed. As the main research method, the 2-stage version of DEA approach was applied, a globally recognised tool for measuring enterprise involvement in sustainability practices (Belu, 2009; Mardani et al., 2017). The data for the study were collected based on the content analysis regarding disclosures in banks' documents and their websites, referring to aspects determined according to Directive 2014/95/EU, GRI and ISO 26000.

Banks were selected as the subject of this research because of their active engagement in sustainable actions, followed by the widely disseminated sustainability reporting practices. CSR disclosure by banks stems from institutional and strategic legitimacy processes (Oliveira et al., 2019). To the authors' best knowledge, empirical studies on sustainability reporting in the banking sector

in CEE countries with a data envelopment analysis (DEA) approach are non-existent. Moreover, there is a lack of studies on the CSP efficiency in CEE banks.

This paper makes three contributions to the existing literature. Firstly, the findings are important for a better understanding of the importance of sustainability reporting in the light of efficiency measurement in terms of economic-organisational, social and environmental performance in the chosen CEE countries. Secondly, this paper contributes to the literature by answering the need for greater clarity and knowledge on the sustainability performance efficiency in the banking sector in Poland, Croatia, and Romania in the light of corporate value creation. This research contributes to the existing literature by providing a more extensive view of the efficiency of sustainable engagement of banks in three CEE countries. Thirdly, this study proposes an alternative approach to understanding the relationship between sustainability engagement and value creation.

The conclusions may lead to improved decision-making processes for achieving sustainable development goals and their disclosures in corporate reporting. They may also help evaluate and compare the business sectors (in this case, the banking sector) or individual organisations (banks) internationally. The proposed approach may be extended to other sectors and countries.

The paper is structured as follows: The following section provides the background for the research study examining the existing research on sustainability/CSR reporting in the banking sector in Poland, Croatia and Romania. The third section of this paper explains the empirical research, and the fourth part presents a discussion of the results of this study. In the last part of the paper, the research conclusions are outlined.

## Literature review – Sustainability reporting in banks in Poland, Croatia and Romania

Social and environmental accounting or sustainability accounting and reporting have become one of the major issues that organisations grapple with on a daily basis (Lodhia & Sharma, 2019; Raczkowski et al., 2016; Fijałkowska, 2015). Transitional

and newly industrialised or emerging economies undergo many political, structural, social and economic changes, including the growing public awareness of the need for corporate sustainability (Zyznarska-Dworczak, 2018) and sustainability reporting. Sustainability reporting is mostly voluntary (Buhr et al., 2014; Massa et al., 2015); however, some elements of non-financial disclosure are increasingly mandated and encouraged in more and more jurisdictions (De Villiers, 1999; Stubbs & Higgins, 2015; De Villiers et al., 2018). The literature review results reveal that research in sustainability reporting practices by companies in emerging countries remains low (Md Zaini et al., 2018). The concept of corporate sustainability itself in CEE countries is relatively new; however, it is rapidly gaining acceptance, in particular as part of the countries' integration within the European Union.

The vast majority of prior studies concerning social and environmental issues in the banking sector have been conducted in developed capital markets, and studies carried out in other markets are sparse (Simpson & Kohers, 2002; Wu & Schen, 2013). While international research concerning accounting on social and sustainability issues has grown significantly over the last decade, there is a shortage of research investigating the nature and extent of this topic in CEE countries as compared to more developed countries; therefore, more research in this field is needed (Albu et al., 2013). Moreover, research conclusions from developed capital markets are not considered applicable to emerging or developing countries because of political, economic, and social differences (Belal et al., 2013; Elsayed & Hoque, 2010). CEE countries try to transform their economy and business practices bearing the legacy of socialism to join the developed and mature markets which are aware of the need for sustainable development. The banking industry has a higher level of social interaction in comparison with other financial intuitions; therefore, banks are expected to be socially responsible (Rehman et al., 2020) and report on that to their stakeholders.

Scientific research in each analysed country observes growing interest in sustainability reporting in Poland (Fijałkowska & Macuda, 2019), also in the banking sector. There is considerable research in the area of CSR and sustainability disclosure by banks in Poland (e.g. Fijałkowska & Zyznarska-Dworczak, 2018; Korzeb & Samaniego-Medina, 2019; Krasodomska, 2015; Sułkowski & Fijałkowska, 2019), as several Polish banks, especially the largest one, are actively involved

both in the sustainability activities and the reporting of their results. Nevertheless, the empirical research conducted by Fijałkowska et al. (2017) confirmed that the Polish market and the public were, by that time, reluctant to consider the importance of social and environmental engagement. In 2018 the same researchers analysed the interrelation between corporate social performance and corporate financial performance in the biggest CEE banks (Fijałkowska et al., 2018). The results obtained showed that in the case of banks in the CEE region, being socially responsible was not reflected in the bottom line, nor did the banks' financial condition impact the CSR engagement. However, in the same year, a study by Paluszak and Wiśniewska-Paluszak (2018) indicated that the leading CSR banks in Poland increasingly better understand the role of corporate involvement in society as a modern strategic approach that leverages capabilities to improve salient areas of competitive context and transforms value chains activities to the benefit of the society while reinforcing corporate strategy. The sustainability performance of banks in Poland exclusively was also analysed by Korzeb and Samaniego-Medina (2019). The authors concluded that the government-owned and national banks showed a greater commitment to sustainability performance than the banks with foreign capital. Matuszak and Różańska (2020), analysing online CSR disclosure in the banking industry, observed that that accessibility to CSR information disclosed by banks is relatively good.

The literature review confirms that corporate sustainability reporting in banks is also the subject of scientific research in Croatia; however, it is limited to several articles only. Kundid and Rogośić (2011) analysed the CSR website reporting of the banks in Croatia and revealed that "large banks publish more information on their CSR activities compared to small-sized banks". Moreover, they concluded that banks' profitability positively impacted the corporate social practices disclosure. Rogośić (2014) conducted empirical research on corporate social reporting in 31 banks of Croatia and found that 28 of the banks did not publish information on social engagement as standalone reports, whereas only 3 of the investigated banks published a separate report on the banks' websites. In the study by Cosma et al. (2020) it is emphasized that the scope of contribution to the sustainable development goals from the European banks is narrow. The authors add that this scope is larger in emerging countries, such as

Estonia, Croatia and Poland, with significant differences when comparing banks operating in the same country.

The recent literature on sustainability in the Romanian banking sector is not vast, as most studies focused on reporting by non-financial companies. The examples of studies concerning CSR/sustainability issues in the banking sector in Romania include the one by Tamas-Szora and Socol (2015), who investigated the reporting practices of foreign banks operating in Romania in 2015. They concluded that most of the foreign bank branches active in Romania did not disclose information on social engagement. In a study conducted by Frecea (2017), the author analysed the CSR visibility in the Romanian banking sector, identifying the main reasons behind the CSR decisions, trying to distinguish between different CSR dimensions through a coding process that would reveal the dominant theme of CSR engagement in this sector. In one of the latest studies, Dinu and Bunea (2019) proved that what can be noticed is “the preoccupation of the banks to promote the importance of CSR in Romania and to raise awareness on this concept in the business environment and the society”, intended to proceed towards sustainable development. The authors were also testing the possible correlations between the CSR index and the financial performances of the Romanian banks; however, their results did not bring into light a direct relationship between the two variables. The latest study, conducted by Marcu et al. (2022), focuses on the pandemic context of CSR disclosure by Romanian banks, and it was concluded that the banks have done much to rehabilitate their reputation impacted by the previous economic crisis. Additionally, the authors noticed that the results of their study could help the banking system learn to be more empathetic and understanding towards customers and to enhance its presence in the community.

The banking sector and its financial and reputational situation strongly determine the quality and prospects of the financial services market that condition the economy’s stability. At the same time, the reputation of banks depends on many factors — to a high degree on their social reception. Therefore, many banks engage in activities concerning sustainability, and they report on that. However, the question remains: how efficient their activities are, and how effective the use of resources in the field of the realisation of sustainable goals is; in other words, whether value is created.

## Empirical research

In order to create value, banks engage in sustainability activities and attempt to manage business efficiency at various levels. The study's basic premise is that in the first stage of sustainability engagement, banks are trying to implement economic goals bringing quickly visible effects of the organisational improvement. It may also be assumed that a more efficient institution will be the one that achieves the economic goals while using fewer resources, both financial and in the form of human work. Therefore, in the first stage, this study presents an analysis of the efficiency of value creation via achieving a sustainable position in the context of banks' financial and human resources engagement translated into economic and organisational efficiency. In the next stage, the analysis refers to banks' social and environmental efficiency resulting from their economic and organisational standing. The assessment of the bank's sustainability should include all these dimensions of the institutions' development.

### *Sample*

The sample contains the data concerning all banks in Poland, Croatia and Romania, listed on the Stock Exchanges in Warsaw, Zagreb and Bucharest, respectively. They account for 12 banks quoted on the Warsaw Stock Exchange, 9 on the Zagreb Stock Exchange, and 3 on the Bucharest Stock Exchange. The period analysed is 2015–2018. Consequently, the resulting study sample consists of 96 observations.

### *Variables*

#### **CSP Variables**

CSP is problematic to define and measure. An economic unit may be understood as operating sustainably when it is engaged in economic, social and environmental activities simultaneously, and when it communicates them in the annual report or in a separate sustainability/CSR report. In this

study, two kinds of variables signalling the company's sustainability have been adopted. One is a dummy variable equal to 1 if the bank publishes its sustainability/CSR report. The second variable concerns the intensity of sustainability disclosure that is calculated by creating indexes concerning three dimensions of sustainable engagement: economic and organisational, social, and environmental ones. These three indexes comprised the aggregation of indicators calculated based on the information retrieved from the content analysis. Content analysis is a basic research method applied in a semi-objective approach, following the division of research methods that are applied to the analysis of narratives in annual reports proposed by Beattie et al. (2004). The indicators that are proposed in this study refer to the data accessible in the entire period of analysis, i.e. 2015–2018, for all of the 24 publicly listed banks in the three countries analysed.

While carrying out the content analysis, the information disclosed by the banks in the sample was analysed in reference to 21 different areas. The items to be analysed were determined according to Directive 2014/95/EU, GRI, and ISO 26000, comprising:

1. Corporate organisational governance
2. Human rights
3. Labour practices
4. Environmental activities
5. Fair operating practices
6. Customers' issues
7. Community involvement
8. Business model
9. Risk management
10. Efficiency in energy use/use of renewable energy
11. CO<sub>2</sub> emission
12. Water use
13. Air pollution
14. Gender equality/diversity
15. Working conditions

16. Health and safety at work
17. Dialogue with local communities/stakeholders
18. Corruption and bribery issues
19. Codes of ethics
20. Values

Procedures against money laundering and terrorism financing (AML/CTF).

Following the approach proposed by Dumitru et al. (2017), the content analysis was conducted, based on the following scoring system:

- 0 – no presentation;
- 1 – narrative presentation;
- 2 – presentation using KPIs or other numerical data; and,
- 3 (1 + 2) – narrative and numerical presentation simultaneously.

In order to gather the necessary information, the analysis embraced the sustainability/CSR reports (whenever available), annual reports, and the websites of banks in the sample. Altogether, 96 annual bank reports were analysed: 48 reports of banks from Poland, 36 reports of banks from Croatia, and 12 reports of banks from Romania, available for the period 2015–2018. Every year, the banks disclose sustainability information in their annual reports (directly in the notes to the financial statement or in the management commentary), or in the form of separate sustainability/CSR documents. The content of the websites tags regarding sustainability activities, performance and outcomes of the banks was also analysed. It was also checked whether the banks in the sample received any awards concerning outstanding achievements in the field of sustainability or socially responsible behaviour. Moreover, it was verified if the banks were quoted on a special index of the stock exchanges including highly socially responsible companies.

Based on the approach described above, the three main dimensions of the sustainability engagement of banks were created. Within all the dimensions, the indicators enabling the evaluation of sustainability engagement were calculated



through assigning weights according to the way/intensity of the information disclosure. In this way, the following indexes were created:

- economic and organisational index, composed of the indicators defining the organisation itself, e.g. its corporate governance, risk management, business model, procedures against money laundering and terrorists;
- social index, composed of the indicators related to social issues, e.g. human rights, labour practices, fair operating practices, community involvement, consumer issues, community involvement, gender equality, working conditions, health and safety at work, dialogue with local communities, corruption and bribery, ethical code and values;
- environmental index, composed of indicators concerning the environment e.g. environmental activities, efficiency in energy use/use of renewable energy, CO<sub>2</sub> emission, water use, air pollution.

The indexes listed assess the overall extent and quality of social and environmental disclosures. All the information necessary to create indicators and indexes was collected manually; the same information was always gathered by two scholars independently, followed by the discussion of any discrepancies revealed after the completion of a codification process with the participation of all members of the research team.

### **Financial data**

The financial data was obtained from audited consolidated financial statements that were derived from the EMIS database. To a great extent, the accounting-based measures have been used since the audited accounting data is likely to be authentic and credible, and it is not influenced by market perceptions or speculations.

## **Methodology**

The two-stage data envelope analysis (DEA) approach was used in the study to evaluate the economic and organisational, social, and environmental performance. In order to carry on DEA, it was necessary to perform a disclosure analysis.

DEA is a method that measures efficiency, introduced by A. Charnes, W. Cooper and E. Rhodes (Charnes et al., 1978). It is a data-driven tool for performance evaluation, benchmarking, and multiple-criteria decision-making (Li et al., 2019). The DEA approach can be used to measure relative efficiency and gauge productivity without requiring the production function to take a specific mathematical form (Chang et al., 2013). This nonparametric method was proposed to evaluate the efficiency of the conversion of examined objects (decision-making units – DMUs) inputs into outputs. The evaluation of the objects' efficiency is carried out by measuring the distance of the object from the so-called efficiency frontier, which is created on the basis of the best objects in the group (benchmarks).

DEA is mentioned in the literature as an appropriate method for measuring sustainability in terms of efficiency (e.g. Belu, 2009; Chang et al., 2013; Zhou et al., 2018). This method was also used as an efficiency measurement tool in the banking sector, e.g. in Canada (Asmild et al., 2004), China (Xiaogang et al., 2005; Wang et al., 2014) and Italy (Piatti & Cincinelli, 2015).

It has been noted that DMUs may have 2-stage network structures with intermediate measures (e.g. Cook et al., 2010; Chen et al. 2009; Halkos et al., 2014). Models for evaluating efficiencies of such DMUs are called two-stage network DEA models. These models have a variety of applications, for example in schools, banks or factories (Chang et al., 2013; Mardani et al. 2017), because they allow their users to take into consideration multiple variables and balance multiple objectives in the evaluation process.

One of the merits of 2-stage network DEA models is that the estimated sub-stage efficiencies help decision-makers establish the inefficient areas and understand the improvement directions for each DMU under evaluation. To apply the 2-stage approach of DEA, the following notation is used:

$j \in J = 1, 2, \dots, n$  – the index of  $n$  DMUs,

$j_0 \in J$  – denotes the evaluated DMU,

$\mathbf{X}_j = (x_{ij}, i=1, 2, \dots, m)$  – the vector of the initial inputs used by  $DMU_j$ ,

$\mathbf{Z}_j = (z_{pj}, p=1, 2, \dots, q)$  – the vector of the intermediate measures for  $DMU_j$ ,

$\mathbf{Y}_j = (y_{rj}, r=1, 2, \dots, s)$  – the vector of the final outputs produced by  $DMU_j$ ,

$\mathbf{v} = (v_1, v_2, \dots, v_m)$  – the vector of weights for the initial inputs,

$\mathbf{w} = (w_1, w_2, \dots, w_q)$  – the vector of weights for the intermediate measures,

$\mathbf{u} = (u_1, u_2, \dots, u_s)$  – the vector of weights for the final outputs,

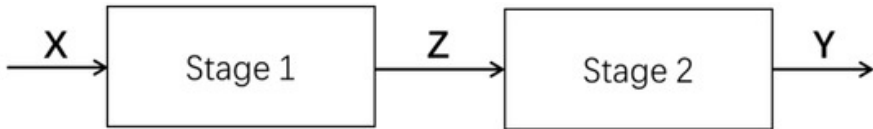
$e_{j_0}$  – the overall efficiency of  $DMU_{j_0}$ ,

$e_{j_0}^1$  – the stage 1 efficiency for  $DMU_{j_0}$ ,

$e_{j_0}^2$  – the stage 2 efficiency for  $DMU_{j_0}$ .

The elementary two-stage system 1, with each DMU transforming external inputs  $X$  into final outputs  $Y$  via intermediate measures  $Z$  using a two-stage process, is represented in Figure 1. In this basic setting, only external inputs of the first stage enter the system, and only second stage outputs leave the system.

**Figure 1.** Two-stage system



Source: Own elaboration

Supposing there are  $n$  DMUs in the system, the definition of the first stage and the second stage of efficiency is as follows:

$$(1) \quad e_j^1 = \frac{wZ_j}{vZ_j}, \quad e_j^2 = \frac{uY_j}{\tilde{w}Z_j}$$

Theoretically, the multipliers  $\mathbf{w}$  and  $\tilde{\mathbf{w}}$  for the intermediate measures do not have to be equal in efficiency evaluation. However, DEA researchers have broadly agreed that the same intermediate product  $\mathbf{Z}$  has the same multipliers associated with it. Therefore, in this article it is assumed that  $\mathbf{w} = \tilde{\mathbf{w}}$ .

The overall efficiency of the two-stage process is defined by the following relational model (Li et al., 2019), which is the product of the stage efficiencies:

$$(2) \quad \text{Max } e_{j_0} = e_{j_0}^1 \cdot e_{j_0}^2 = \frac{uY_{j_0}}{vX_{j_0}}$$

s.t.

$$\frac{wZ_j}{vX_j} \leq 1; \frac{uY_j}{wZ_j} \leq 1, j=1,2,\dots,n$$

$$v, w, u \geq \varepsilon$$

where  $\varepsilon$  is a non-Archimedean constant.

Equation (2) represents fractional programming and can be transformed into linear programming by applying the Charnes and Cooper (1962) transformation.

After the overall efficiency is achieved, the stage efficiencies can be calculated using Equation (1). Due to the existence of multiple optimal solutions in a linear program, it may lead to non-uniqueness for sub-stage efficiencies when decomposing the overall efficiency into stage efficiencies. By applying the standard two-stage DEA model, the efficiency score of each stage and its corresponding rank can be obtained. It is meaningless to compare the efficiency scores between the two stages. Although the efficiency of stage 1 for  $DMU_{j_0}$  is greater than that of stage 2, it does not mean that stage 1 performs better than stage 2. However, the relative advantages for each stage by rank can be estimated. For example, the efficiency score of stage 2 is higher than that of stage 1, thus we can judge that stage 2 has advantages relative to stage 1.

For a given  $DMU_{j_0}$ , the relative rate of increase of the efficiency rank for stage 1 and stage 2 is possible to be calculated following Li et al. (2019):

$$(3) \quad \alpha\% = \frac{\text{rank (stage 2)} - \text{rank (stage 1)}}{\text{rank (stage 2)}}, \text{rank (stage 2)} \geq \text{rank (stage 1)}$$

$$\frac{\text{rank (stage 1)} - \text{rank (stage 2)}}{\text{rank (stage 1)}}, \text{rank (stage 1)} > \text{rank (stage 2)}$$

The model presented in equation (3) has been applied in this research in relation to the effectiveness of sustainability results in the banking sector. In order to calculate the efficiency rank, the CCR output-oriented model was used.

## Discussion of the results

Applying the DEA model (equation 3) allowed us to present information on assessing banks' efficiency concerning sustainability engagement disclosed by banks in selected CEE countries, obtained in individual stages of the 2-stage DEA approach (see Appendix).

Input data for the first stage included financial ratios: total revenue, total value of deposits in Euro, and the data concerning the employment rate. These three indicators were used to determine the size and the financial position of the analysed banks, as well as their potential to engage in sustainability activities. This approach follows the previous research results confirming that better financial performing organisations are more intensively involved in social/environmental actions and reporting on them (Murray et al., 2006).

As the output data, the assessment of the degree of sustainable development objectives achievements was used: it was expressed as the sum of social indicators (social index) and the sum of environmental indicators (environmental index) analysed separately.

As the intermediate measures, the following measures were used: net profit (net loss), the sum of economic-organisational indicators, the level of information on sustainability policy (the presence of the sustainability/CSR report published and/or the existence of the sustainability tab on the banks' website), and the appreciation of sustainable engagement recognised by the business and institutional environment (sustainability/CSR awards and prizes, being listed on the CSR index).

Such prioritisation of input data, together with the output data and intermediate measures are intended to reflect the organisation's development. This study

assumes that it is easier for banks to achieve their economic-organisational goals first, and only then to achieve their social and environmental goals.

In the empirical study, in both stages of the 2-stage DEA approach, the CCR – DEA output-oriented model was used. Moreover, the efficiency obtained from the CCR – DEA output-oriented model directly on the input and output data without the intermediate stage was also estimated. This result was marked as  $e^{direct}$ . According to formula (2), the overall efficiency was also analysed. It was estimated as the multiplication of the efficiency of stage one and stage two and the  $\alpha\%$  growth rate of the efficiency rank given by the formula (3).

At the first stage of this research, the efficiency of  $e^1$  that refers to the efficiency of the financial and economic and organisational goals achievement was analysed. The higher the result, the better the efficiency. Following the data presented in the Appendix, it can be concluded that Croatian banks obtained the highest efficiency scores in the first stage in all the years of the analysis, as well as the Polish bank BOŚ S.A in 2015, 2017 and 2018. Usually (except for one case) these banks were above median efficiency ratings of stage one. As a rule, the banks' efficiency assessment was also higher in stage one than in stage two (except for Zagrebacka Banka and Podravska Banka). This confirms the efficiency of banks from Croatia in transforming their inputs into high results concerning their economic and organisational effects. It can also be observed that Romanian banks evolve and increase the efficiency of their economic and organisational outcomes. It is especially visible in 2017. Polish banks have surprisingly low efficiency of  $e^1$  in the entire period analysed. Polish banks are among the largest banks in Central and Eastern Europe. However, in the case of the largest of them, it does not translate into higher efficiency in achieving economic and organisational goals. The fact of obtaining sustainability/CSR awards by Polish banks, or being listed on the CSR Index, does not distinguish these banks from the rest of those financial institutions. Hence, the assessment of the efficiency of Polish banks in stage one is very low. There is only one bank in the Polish sample (BOŚ) that in 2017 and 2018 got the highest possible score for efficiency in this stage. However, it can be observed that smaller Polish banks achieve slightly better efficiency at stage one compared to large Polish banks. A good example here is Getin Noble Bank and BOŚ.

The second stage of the analysis refers to the efficiency of  $e^2$  that explains the efficiency of social and environmental engagement. The results of the second stage of the applied method prove that the leaders of CSR and sustainability engagement efficiency are large Polish banks. It is especially true for 2015. These banks had the best scores in the first year of the analysis, then in the following year their scores deteriorated, to achieve very good level again in the last two years of the research. In 2016, better-ranking places were taken by medium-sized Polish banks and some Croatian banks. General improvements in efficiency at this stage may be also observed in Croatian banks – except for the two smallest Croatian banks (Karlovacka Banka and Slatinska Banka) In 2017 and 2018, Polish banks again got very high results arriving at or getting the maximum score (with only a few examples of banks getting the low level of efficiency – this is the case of Millennium Bank as well as Idea Bank in 2017 and 2018). All Romanian banks achieved equally very low ranks in 2015 and 2016; it seems that by that time they did not care much about sustainability engagement, and the efficiency of their activities in this area was very poor. However, in the two following years, they all got the maximum possible efficiency scores in stage two. It is a signal of a significant improvement in the efficiency of Romanian banks in the field of social and environmental engagement. Throughout the whole analysis, it happened only twice that a bank was assessed as getting the maximum efficiency in both steps of the 2-stage DEA. It was the case of IKB Umag in 2016 and of Zagrebacka Banka in 2017. However, Zagrebacka Banka was the only bank in the whole sample to achieve the maximum values of both intermediate and final ratios as well as direct efficiency. In the case of IKB Umag, in the period between 2017 and 2018 its efficiency slightly declined (*inter alia* due to other banks catching up in the sample), yet these two banks should still be assessed as the most efficient banks among all the institutions analysed in this study.

The interesting results are also obtained when comparing  $e^1$  and  $e^2$  ranks. Banks whose efficiency rank in stage 1 was higher than in stage 2 were marked in bold (see Appendix). These are banks that more effectively transform their resources into the achievement of economic and organisational objectives, and are generally more effective in signalling their CSR policy concerning the

economic and organisational dimension of sustainable development than the other dimensions referring to social and environmental engagement. This was the case of 3 out of 12 Polish banks in 2015, 2 Polish banks in 2016, 1 bank in 2017, and 4 banks in 2018. There is one bank in Poland (BOŚ) that in all the years of analysis had the efficiency rank in stage 1 higher than in stage 2. In the case of Croatian banks, in 2015 most of them got the rank in stage 1 higher than in stage 2 (except for 3 cases); in 2016, there were 4 banks with such a result, and in 2017 and 2018 there were 6 and 4 such banks, respectively, out of 9 cases analysed. In Romanian banks, the situation of the first rank being higher than the second one took place in 2 cases in 2015 and in 1 case in 2016. Such results prove that the organisation with  $e^1$  higher than  $e^2$  proceeds on the path of development from the economic and organisational targets towards the new engagement directions concerning the social and environmental objectives.

Banks that are not bolded (see Appendix) are those that have the first stage rank score lower than the second one. It means that even though they do not acquire high efficiency of the intermediate goals, they have higher results regarding the efficiency of social and environmental dimensions. They should reconsider managing intermediate goals concerning the internal part of their organisation. It seems that these banks skipped the critical step in their development and focused directly on meeting the objectives concerning social and environmental issues without considering much the internal needs of sustainability development of a sound organisation.

In this study,  $e^{direct}$  has also been analysed. This value provides information on the efficiency of the initial inputs directly on the efficiency of social and environmental goals achievement. This efficiency proved to be generally very low in all Polish banks in all the years analysed. The value of  $e^{direct}$  was usually very high in Croatian banks – often (10 times in the whole Croatian sample) reaching very close to or precisely the maximum possible score. In the case of the two smallest Croatian banks, its  $e^{direct}$  efficiency was very low. In Romanian banks,  $e^{direct}$  was always very low, except for one bank (Patria Bank SA) that obtained the maximum score in 2017 and 2018. In the cases of  $e^{direct}$  efficiency, high score means that high efficiency in the social and environmental dimension was



achieved directly using the initial input and it was not dependent on the business and organisational structure of the entity.

The value of the  $\alpha\%$  parameter indicates the extent to which the disproportion in the obtained  $e^1$  and  $e^2$  rankings is noticeable - i.e. how much a bank has changed its position in the ranking when comparing  $e^1$  to  $e^2$ . The bigger the change, the higher the improvement, and the higher the level of the  $\alpha\%$  parameter. The efficiency of large Polish banks is very low in stage 1 and is assessed much better in stage 2. This improvement is also evidenced by the high value of  $\alpha\%$ , confirming that the efficiency assessment in both stages was definitely different. One of the effectiveness objectives of the analysis is to identify improvement areas. Generally, the high value of  $\alpha\%$  indicates a large disproportion between the ranks obtained at particular stages. It also indicates a possible high potential of the organisation. As a rule, banks with high  $\alpha\%$  are (in a given year) at a stage of the organisational development where intermediate objectives are already achieved, but there is still a great potential for enhancing the final objectives. Romanian banks are an excellent example of such a development already carried out (especially in 2016) and they may constitute a good benchmark for Croatian banks.

## Conclusions

This study aimed to analyse the efficiency of sustainability engagement of the banks in selected CEE countries, assuming that the efficiency should be treated as a necessary condition for value creation. When analysing banks from Poland, Croatia and Romania, the important and clear differences between the banks and their level of development in the field of sustainability that is disclosed by them may be observed. It should be noted here that Polish banks are among the largest banks in Central and Eastern Europe. In this study sample, they have the highest representation, as out of all the 24 banks examined 12 banks are from Poland. What may be observed in Polish banks is that they have generally high efficiency of the social and environmental dimensions of the sustainability

engagement that they disclose. This is also confirmed by the observation of the raw data that was collected during the content analysis. On that basis, it may be concluded that the social and environmental outcomes of Polish banks are high. Interesting effects are obtained when 2-stage efficiency is run. When the input expressed in terms of the size and financial position of the banks in Poland was analysed, the results indicated that the efficiency concerning economic and organisational outcomes was low. The efficiency of the social and environmental outcomes based on the initial input (the direct efficiency) was also very low in the entire sample of banks from Poland, much lower than in other countries. However, at the same time efficiency of the social and economic engagement of the second stage of DEA model, where the economic and organisational index was taken as the input, proves to be high. Therefore, the intermedia efficiency is high, while the efficiency of stage one and the direct efficiency provided contrary results. The explanation may be that the Polish banks are huge organisations. They have large deposits, very high employment level, very high revenues (these categories are the initial inputs of the first stage of DEA model), and it is a challenge to make them efficient. It is much easier for smaller organisations to prove that with a limited number of resources they gain high outcomes (and thus high efficiency). In the case of the Polish banks, the outcomes are impressive; however, the resources that these banks have at their disposal (inputs) are also huge. The practical implication of this observation is the notice to these banks that apart from the advantages of the huge potential that they may use for their sustainability development, it is crucial for them to keep a very conscious and effective control over it. Such big dimensions of business may create organisational and other types of difficulties for the management. Therefore, the management of these organisations should constantly control banks' activities and their outcomes development.

It is also important to note that the efficiency of the Polish banks concerning the social and environmental dimensions decreased in 2016. This might have been caused by the changes in the political environment concerning banks in Poland. However, a positive change in the improvement of efficiency in the following years may be observed. It is obviously the effect of the introduction of the new EU Directive concerning the extended non-financial disclosure.

In reference to the Croatian banks, it may be observed that the efficiency of the first stage of the analysis is generally high. It means that the banks in Croatia use their resources (people and financial resources) to create the economic and organisational dimension of their development in a highly efficient way. These resources are also important for the achievement of the social and economic goals. Nevertheless, these banks do not have high efficiency in the second stage, meaning that the efficiency of the economic and organisational resources (treated as an input in the second stage) in the context of the social and environmental goals achievement is still not high. Moreover, the overall effects of Croatian banks' engagement as far as social and environmental outcomes are concerned are not very high, but they have been increasing significantly since 2017. Similarly as in Poland, in the case of Croatia it may be also caused by the reaction of the Croatian banks to the requirements introduced by the new EU Directive. It may be also concluded that these banks have important potential expressed in a sound business structure and economic and organisational standing that permit them to carry on towards the new dimensions of sustainability development concerning social and environmental goals. This should be a direction for them in the development towards value creation.

The Romanian banks did not prove to have high efficiency in the first two years of the analysed period. In both stages the efficiency was low in all the banks in the sample. The significant change took place in 2017 and 2018. All banks in the sample received the highest possible results as far as social and environmental efficiency in those years is concerned. It may be also observed that for all of them the first stage efficiency, the economic and organisational one, improved significantly, and this change was the main reason for the overall success in the social and environmental dimension. Therefore, it may be concluded that those banks made a rapid but also very sustainable improvement in their overall development, and they may be treated as a benchmark for other institutions.

This study makes several contributions. In this research, it is presented how the analysis of the sustainability engagement based on the two-stage DEA approach may be helpful in the efficiency analysis of the resources and activities engaged in the achievement of the sustainable goals that bring to the

increase in the value. As part of this research, the examples of financial institutions representing the banking sector in three CEE countries were analysed, and it may be clearly observed how different the ranks are, as well as the levels of the sustainability development achieved by the banks from the analysed countries, and what paths they followed to get to the point they currently are. Based on this analysis, the decision-makers can monitor the efficiency of the resources used and activities taken and diagnose the areas for improvement. They may take appropriate decisions as well. The results may be also useful in the analysis and comparison of different units and entities.

The approach presented in this study may be extended to different organisations and various countries. Moreover, this study may serve as an alternative approach to the analysis of value creation that focuses on the efficiency and not on the direct impact of the CSP on CFP that is extensively discussed in the literature and, since no homogenous results have been obtained, it may be a subject of criticism and certain limitations.

The main limitation of this study is that all the results and the diagnosis presented are based on the information provided, in great majority, by the banks used in the sample in voluntary bases. The quality and extent of the information that the organisation decided to publish influence the results obtained and conclusions derived from the analysis. Therefore, the extent and content of the information disclosed are highly important for the proper analysis, understanding and decision-making processes based on the approach presented in this paper.

# Appendix A

**Table 1.** Efficiency scores for banks

Bank	2015					2016				
	$e^1$	$e^2$	$e^{\text{direct}}$	$e_0^1 \cdot e_0^2$	$\alpha\%$	$e^1$	$e^2$	$e^{\text{direct}}$	$e_0^1 \cdot e_0^2$	$\alpha\%$
Poland										
PKO BP S.A.	0.0143	1.0000	0.0205	0.0143	95.5%	0.0150	0.4711	0.0083	0.0071	33.3%
Santander Bank Polska S.A.	0.2015	1.0000	0.1687	0.2015	92.3%	0.0498	0.9689	0.1115	0.0482	63.2%
Bank Pekao S.A.	0.0235	1.0000	0.0351	0.0235	95.0%	0.0242	0.6860	0.0239	0.0166	45.5%
Mbank S.A.	0.2357	0.6735	0.1685	0.1587	21.4%	0.0892	0.5590	0.1124	0.0499	0.0%
ING BSK S.A.	0.1560	1.0000	0.2458	0.1560	93.8%	0.0765	0.8437	0.1098	0.0645	31.3%
Allior Bank S.A.	0.0322	1.0000	0.0658	0.0322	94.7%	0.0220	0.9374	0.0154	0.0206	65.2%
BGŻ BNP Paribas S.A.	0.0231	1.0000	0.2194	0.0231	95.2%	0.0451	1.0000	0.3556	0.0451	95.2%
Bank Handlowy w Warszawie S.A.	0.2072	1.0000	0.3389	0.2072	91.7%	0.1183	1.0000	0.3773	0.1183	91.7%
Bank Millennium S.A.	0.0397	0.3389	0.0134	0.0135	0.0%	0.0488	0.1905	0.0072	0.0093	5.0%
GetiŃ Noble Bank S.A. (Warsaw)	0.2624	1.0000	0.2989	0.2624	90.0%	0.1129	0.6509	0.1923	0.0735	0.0%
BOŚ S.A.	0.7701	0.4968	0.5501	0.3826	75.0%	0.3879	0.4639	0.4124	0.1800	64.7%
Idea Bank S.A.	0.0590	0.0050	0.0008	0.0003	22.7%	0.1175	0.0133	0.0007	0.0016	43.5%
Zagrebicka Banka d.d.	0.5848	1.0000	0.4177	0.5848	85.7%	0.1486	1.0000	0.3749	0.1486	90.9%
Privredna Banka Zagreb d.d.	0.5080	1.0000	0.3628	0.5080	87.5%	0.1806	0.9319	0.3646	0.1683	10.0%
Erste & Steiermakische Bank d.d.	0.3593	0.6901	0.1444	0.2479	30.8%	0.1757	0.9329	0.5143	0.1639	10.0%
Croatian Postal Bank d.d.	1.0000	0.8704	1.0000	0.8704	91.7%	0.3146	0.9767	1.0000	0.3073	25.0%
Kreditna Banka Zagreb d.d.	0.9521	0.3148	0.4494	0.2997	84.2%	0.9316	0.1659	0.1003	0.1545	80.0%
IKB Umag d.d.	0.7143	0.5394	1.0000	0.3853	60.0%	1.0000	1.0000	0.8961	1.0000	0.0%
Podravska Banka d.d.	0.7257	1.0000	1.0000	0.7257	80.0%	0.7819	1.0000	1.0000	0.7819	80.0%
Karlovacka Banka d.d.	0.9716	0.0054	0.0179	0.0052	90.5%	0.9721	0.0977	0.0134	0.0949	85.7%
Slatinska Banka d.d.	1.0000	0.0011	0.0251	0.0011	95.7%	1.0000	0.0018	0.0211	0.0018	95.8%
Banca Transilvania SA	0.1981	0.2500	0.0003	0.0495	30.0%	0.0587	0.6565	0.1094	0.0385	23.5%
Brd – Groupe Societe Generale SA	0.1803	0.3759	0.1026	0.0678	11.8%	0.0583	0.3907	0.1032	0.0228	0.0%
Patria Bank SA	-	-	-	-	-	0.3303	0.0977	0.0070	0.0323	68.2%
Romania										

**Table 2.** Efficiency scores for banks, cont

	Bank	2017						2018					
		$e^1$	$e^2$	$e^{direct}$	$e^1 \cdot e^2$	$\alpha\%$	$e^1$	$e^2$	$e^{direct}$	$e^1 \cdot e^2$	$\alpha\%$	$e^1$	$\alpha\%$
Poland	PKO BP S.A.	0.0745	0.9803	0.0438	0.0730	47.8%	0.0666	1.0000	0.0662	0.0666	95.5%	0.0666	95.5%
	Santander Bank Polska S.A.	0.2124	0.9152	0.0898	0.1944	16.7%	0.1526	0.7264	0.0769	0.1108	10.5%	0.1108	10.5%
	Bank Pekao S.A.	0.1117	0.5058	0.0134	0.0565	9.1%	0.1048	1.0000	0.0934	0.1048	95.2%	0.1048	95.2%
	Mbank S.A.	0.2036	0.8847	0.1385	0.1802	15.8%	0.1497	1.0000	0.1313	0.1497	94.4%	0.1497	94.4%
	ING BSK S.A.	0.2428	0.8383	0.1786	0.2035	0.0%	0.2222	0.8312	0.2479	0.1847	11.8%	0.1847	11.8%
	Alior Bank S.A.	0.1421	1.0000	0.0986	0.1421	95.2%	0.1283	1.0000	0.1572	0.1283	94.7%	0.1283	94.7%
	BGŻ BNP Paribas S.A.	0.2758	1.0000	0.2112	0.2758	93.8%	0.1729	1.0000	0.1927	0.1729	93.8%	0.1729	93.8%
	Bank Handlowy w Warszawie S.A.	0.4366	0.9534	0.3460	0.4162	7.1%	0.3585	0.9531	0.3989	0.3417	13.3%	0.3417	13.3%
	Bank Millennium S.A.	0.0468	0.2330	0.0032	0.0109	12.5%	0.0507	0.2573	0.0037	0.0130	13.0%	0.0130	13.0%
	Getin Noble Bank S.A. (Warsaw)	0.7230	1.0000	0.3951	0.7230	90.0%	0.5866	1.0000	0.5233	0.5866	88.9%	0.5866	88.9%
Croatia	BOŚ S.A.	1.0000	0.5382	0.6757	0.5382	94.7%	1.0000	0.7891	1.0000	0.7891	94.4%	1.0000	94.4%
	Idea Bank S.A.	0.1961	1.0000	1.0000	0.1961	95.0%	0.1078	1.0000	0.0543	0.1078	95.0%	0.1078	95.0%
	Zagrebacka Banka d.d.	1.0000	1.0000	1.0000	1.0000	0.0%	0.4164	1.0000	0.4719	0.4164	90.9%	0.4164	90.9%
	Privredna Banka Zagreb d.d.	0.9227	0.9829	0.4096	0.9069	45.5%	0.6892	1.0000	0.4767	0.6892	87.5%	0.6892	87.5%
	Erste & Steiermakiše Bank d.d.	0.9174	0.9171	0.6129	0.8413	50.0%	-	-	-	-	-	-	-
	Croatian Postal Bank d.d.	0.3032	0.7851	1.0000	0.2380	16.7%	1.0000	0.8758	1.0000	0.8758	93.8%	1.0000	93.8%
	Kreditna Banka Zagreb d.d.	0.9253	0.0840	0.0908	0.0778	77.3%	1.0000	0.0819	0.0953	0.0819	95.5%	0.0819	95.5%
	IKB Umag d.d.	0.7326	1.0000	0.9406	0.7326	88.9%	0.7326	1.0000	0.9108	0.7326	85.7%	0.9108	85.7%
	Podravska Banka d.d.	0.8098	1.0000	1.0000	0.8098	87.5%	0.8148	1.0000	1.0000	0.8148	83.3%	1.0000	83.3%
	Karlovačka Banka d.d.	1.0000	0.0100	0.0145	0.0100	95.7%	1.0000	0.0164	0.0133	0.0164	95.7%	0.0133	95.7%
Romania	Slatinska Banka d.d.	1.0000	0.0013	0.0168	0.0013	95.8%	1.0000	0.1503	0.4300	0.1503	95.2%	0.4300	95.2%
	Banca Transilvania SA	0.4609	1.0000	0.1237	0.4609	92.3%	0.3594	1.0000	0.1174	0.3594	91.7%	0.1174	91.7%
	Brd – Groupe Societe Generale SA	0.4791	1.0000	0.3174	0.4791	90.9%	0.2447	1.0000	0.2989	0.2447	92.9%	0.2989	92.9%
	Patria Bank SA	0.4713	1.0000	1.0000	0.4713	91.7%	0.5447	1.0000	1.0000	0.5447	90.0%	1.0000	90.0%

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