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The role of value co-creation in building trust and reputation in the digital banking era

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ABSTRACT

This study investigates how customers co-create value in online banking. The aims of this study were twofold. First, it tests the DART model (dialogue, access, risk assessment, and transparency) as a driver of customer value co-creation. Second, this study investigates trust and reputation as the outcomes of value co-creation in online banking. Exploratory factor analysis was used by applying a Principal Components Analysis with SPSS and SMART PLS to check the model and the relationship between the factors of the DART model, value co-creation, company reputation, and customer trust. Data were collected through a questionnaire sent to 217 online bank customers. The findings show that strategic value co-creation is influenced by dialogue, access to information, risk assessment, and transparency. The results also show that customer value co-creation can result in greater reputation and trust. This study contributes to the literature in two ways. First, this study extends the marketing literature by showing that value co-creation can generate reputation and trust as an outcome, changing the perspective in which the phenomenon is traditionally observed. Second, the study tests the DART model in the online banking industry, showing that the original model also works for bank customers. This study provides managerial guidelines for each variable of the DRAT model.

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1. Introduction

Online banking allows customers to conduct more financial operations without going to physical branches. Customers play a more significant role in developing innovations (Thomke & Hippel, 2002). They have skills equal to those of the company's internal teams (Prahalad & Ramaswamy, 2004a). Moreover, customers can provide resources beyond purchases and financial contributions, such as knowledge (Harmeling et al., 2017). This makes the customer a pivotal actor in the online banking sector that must be involved in the strategic process of value co-creation (Agrawal & Rahman, 2015). Value co-creation centres on active customer interaction with the company (Vargo & Lusch, 2008, 2011, 2016). This collaborative interaction creates value by integrating resources, such as customer knowledge and company experience, leading to better products and services that are adjusted to customers' needs (Prahalad & Ramaswamy, 2004a).

However, the dematerialized world of the Internet could still be a scary place for customers, especially regarding people's savings and financial resources. Therefore, studying value co-creation and its relationships with customer trust and the company's reputation in an online bank environment is essential for several reasons. This may empower banks to build stronger customer relationships, differentiate themselves in a competitive market, and ensure long-term success. Focusing on customer trust is the foundation of any successful banking relationship, particularly in an online setting where customers may be

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concerned about security and privacy. Value co-creation fosters customer participation, collaboration, and resource sharing, all contributing to trust-building between customers and banks. Further, a bank's reputation is a crucial asset in the financial industry. Banks can enhance their reputation through value co-creation by showcasing their commitment to customer satisfaction, innovation, and responsiveness to customer needs (Oklevik et al., 2024).

Although previous studies have the merit of increasing our knowledge of how customer value co-creation occurs (Kucharska, 2017; Syah & Olivia, 2022), also in online banking (Aldás et al., 2009), showing how customers' trust in online settings and banks' reputation may be pivotal in customer-bank relations as a prerequisite for strategic value co-creation (Dhaigude et al., 2023; McCormack & Deacon, 2017), only a few studies focus on customers' trust and company reputation as consequences of the value co-creation process.

Trust and company reputation have traditionally been viewed as antecedents that positively influence customer value co-creation (Mostafa, 2020). Additionally, some studies have explored the mediating role of trust in the context of privacy risk and value co-creation (Wang et al., 2020). However, our research shifts this perspective by demonstrating that effective value co-creation can enhance reputation and trust. This, in turn, enables banks to adopt a customer-centric approach, offering tailored solutions and fostering long-term relationships grounded in shared values and customer satisfaction (Oklevik et al., 2024).

We propose that customers' trust and company reputation should be recognized as direct outcomes of successful value co-creation strategies in the online banking environment. By embracing this innovative perspective, our study addresses a critical gap in the literature. By conceptualizing DART elements as drivers, we investigate how these components directly influence trust and company reputation, both essential for strategic success in the online banking sector. This novel approach aligns with the DART model's core principles and provides fresh insights into the intricate relationship between value co-creation and its outcomes.

The aims of this study were twofold. First, it tests the DART model (dialogue, access, risk assessment, and transparency) as a driver of customer value co-creation (Prahalad & Ramaswamy, 2004a). Second, this study investigates trust and reputation as the outcomes of value co-creation in online banking. Consequently, this study addresses the following research questions: (1) Is the effect of dialogue, access, risk assessment, and transparency on customer value co-creation significant in the banking industry? (2) How is value co-creation related to customer trust and bank reputation?

This study uses exploratory factor analysis applying a Principal Components Analysis and SPSS version 28 and SMART PLS version 4 software to check the model and evaluate the relationship between the factors of the DART model, value co-creation, company reputation, and customer trust. To do so, data were collected through a survey, resulting in 217 valid questionnaires from online bank customers. Thus, this study makes two contributions. First, it tests the DART model in the online banking industry and shows that the original model also works in the banking industry. Second, this study extends the marketing literature by showing that value co-creation can generate reputation and trust as an outcome.

The remainder of this paper is organized as follows. First, a theoretical framework is presented in the following sections, and the research hypotheses are developed. Subsequently, this paper introduces the model's empirical research methodology, measures, and tests. Finally, the results are presented and discussed, along with the theoretical and managerial implications, research limitations, and suggestions for future research.

2. Theoretical background

2.1. Strategic value co-creation in the bank industry

The value creation process considers the joint efforts of actors in the dyad, actors benefiting themselves while interacting and collaborating in the strategic process of value co-creation (Vargo & Lusch, 2008, 2011, 2016). The numerous interactions and outcomes of these activities can have a widespread impact on the evolution of business strategies (Gadde & Håkansson, 2011) because of the participatory role of customers collaborating as innovators (Amegbe et al., 2023; Ramaswamy & Ozcan, 2018). This practice continues to develop, particularly with new interactive and information technologies. The nature of

digital interactions, dynamic, synchronous, and changing, calls for special attention to co-creational activities and their measurement (Royo-Vela & Mariell Velasquez Serrano, 2021). Value creation is based on interaction, and value co-creation is defined as joint activities by actors involved in direct dyadic interactions (Grönroos & Ravald, 2011). This interaction among actors generates strategic experiences for value creation (Ramaswamy, 2008; Suryadi et al., 2023). Thus, customers can actively participate in both service or product shaping and the perception and creation of value and experience based on the interaction (Vargo & Lusch, 2011).

Thus, value creation has changed from a linear process across supply chains to value co-creation, in which network actors interact and share resources assisted by digital and interactive technologies (Royo-Vela & Mariell Velasquez Serrano, 2021). Digital technologies like IT platforms and mobile apps allow banks to integrate complementary resources and capabilities and collaborate with customers to co-create value (Mefoute Badiang & Nkwei, 2024). However, many banks aim for innovation as a strategic outcome of value co-creation, as they lack innovative capabilities or tools (Ferguson & Hlavinka, 2007). Thus, banks must tap into customer creativity and objectivity (Yoo et al., 2010). Accordingly, direct bank-customer interaction is needed to strategically co-create value (Andreu et al., 2010). Additionally, banks must implement a customer relationship approach to support strategic value co-creation (Payne et al., 2008).

The banking industry uses advanced technology to provide consumers access to products and services (Malar et al., 2019). The rise of digital technologies, such as virtual environments, has enabled banks to have a closer and quicker relationship with their customers, making physical interactions obsolete (Martovoy & Santos, 2012; Royo-Vela et al., 2022). Besides technologies, market orientation helps banks become closer to their customers (Ind & Coates, 2013). Hence, customers are invited to contribute toward satisfying their needs. Consequently, the relationship between banks and their customers is active, with consumers perceiving usefulness when using the provider's services (Grönroos, 2011). Such dynamics animate new customer needs and demands (Hosseini et al., 2022).

Furthermore, customers' expectations grow as much as effortlessly accessing the product and service information offered by the Internet. Therefore, another market segment might easily detect an innovation available in a small market segment (Mainardes et al., 2017). Another aspect of online banking is accessibility to consumers, as depicted by the constant sharing of ideas and value co-creation of new tailor-made services strategically created from customers' needs (Akter et al., 2020; Oliveira & Von Hippel, 2011).

When it comes to the advantages that strategic value co-creation brings to both consumers and banks, direct interaction with the bank has a stronger relationship with customers, which, in turn, positively affects the bank's economic performance (e.g. operating cost reduction and higher return of investment) (Mainardes et al., 2017). In addition to financial performance, direct customer interaction has fostered responsiveness to market changes in the banking industry. From the customer perspective, their strategic involvement in the value co-creation process brings numerous benefits, such as lower bank account charges, more accessible access to credit, and quicker customer care service (Jain & Jain, 2015).

2.2. The DART model and the role of reputation and customer trust

When theorizing the DART model, Prahalad and Ramaswamy (2004a) focused on the features of strategic value co-creation and identified four variables: *dialogue*, which implies interactivity between the parties; *access*, which promotes dialogue; *risk assessment* based on firm-customer pairing when deciding to co-create; and *transparency* so that the information between the involved actors is symmetrical. Prahalad and Ramaswamy (2004a) highlight the necessity and importance of employing the DART model for customer strategic value co-creation, including elements characterizing firm-customer collaborative work. The DART model has been used in several sectors and settings. For example, using the DART model, Russo Spena et al. (2012) detected an intense exchange of information between customers and companies in the pop-up retail industry in Italy. Ramaswamy (2008) showed how Nike sustained its competitive advantages through a value co-creation strategy based on customers' ideas to improve products and their feelings when using them. Several studies have tested the effectiveness of the DART model. For instance, Albinsson et al. (2016) formulated 23 items to measure DART variables of strategic value

co-creation. These scholars surveyed 327 participants in two US business schools and found a statistical correlation. Finally, Mazur and Zaborek (2014) tested the DART model on 30 indicators with 440 mid-level managers from various companies (e.g. food and beverage, cosmetics manufacturing, hotels and accommodation, catering, and other tourism services). Nevertheless, to our knowledge, studies have not yet tested the DART model in online banking (Banik & Rabbanee, 2023).

Moreover, this study included reputation and trust to understand how they relate to the DART model. This study also aims to verify whether reputation and trust are the outcomes of customer value co-creation in online banking. This study included reputation because it generates online endorsers (Madden & Smith, 2010). However, few studies have directly related to co-creation and reputation. Moreover, previous studies have neglected that reputation may occur due to value co-creation, leaving a gap in the literature. For example, in Oreg and Nov (2008) study, reputation motivates customers to participate in strategic value co-creation because it increases people's desire to create notoriety and, thereby, obtain the approval of others. In addition, a good reputation favours stakeholder engagement, which is critical for customer value co-creation (Abror et al., 2023; Dandis et al., 2021; Nguyen et al., 2022). In particular, Oklevik et al. (2024) explored the intricate relationships between co-creation elements and customer engagement within various service industries, including banking. Their study emphasized the significance of the DART model as a fundamental component driving brand experience strength and satisfaction.

Customer trust is another factor traditionally studied as an antecedent of value co-creation (Dhaigude et al., 2023; McCormack & Deacon, 2017). For instance, Pavlou (2003) considered trust a fundamental pillar of consumer behaviour in physical and online purchases. Trust in the Internet channel includes specific attributes between firms and customers, such as perceived benevolence, capacity, competence, honesty, integrity, credibility, predictability, and reliability, and other characteristics specific to the online environment, such as security and privacy (Grabner-Kräuter & Faullant, 2008). Consequently, trust is essential in online banking because risk perception is higher online than offline (Cheung & Lee, 2001). Furthermore, with Internet banking, customers' trust does not physically see the product or the person carrying out the transactions. Thus, generating trust in online users is vital as there is no personal contact (Flavián & Guinalíu, 2005; Lee, 2002). In addition, trust pushes Internet users to recommend online services, which turns trust into a viral marketing tool (Li & Chen, 2009). Therefore, trust leads to long-term relationships because of emotional bonds (Frau et al., 2023a, 2023b). In conclusion, there is broad consensus in the literature regarding the importance of trust in the value co-creation process. What is still under discussion is whether trust is a consequence of value co-creation.

3. Research framework and hypotheses

A key variable explaining customer value co-creation is dialogue, which Prahalad and Ramaswamy (2004b, p.6) define as "interactivity, engagement, and propensity to act – on both sides […] it implies shared learning and communication between two equal problem solvers." Dialogue facilitates a two-way interaction where firms and customers engage in mutual problem-solving and value creation. Hoyer et al. (2010) emphasize that dialogue is crucial for creating value and driving innovation. When customers are given a voice in the value co-creation strategy, they are more likely to contribute ideas and feedback that enhance the value proposition (Vargo & Lusch, 2008). This participatory approach ensures that the solutions developed are closely aligned with customer needs and preferences, leading to higher perceived value. Moreover, dialogue fosters a sense of customer ownership and involvement, which is essential for value co-creation. Beckers et al. (2018) suggest that when customers feel heard and valued, they are more likely to engage in positive actions on social networks, enhancing brand equity and shareholder value. This engagement is critical in social media, where customer interactions can significantly influence public perception and brand reputation. While Frau et al. (2018) acknowledge that interacting with customers and other stakeholders might sometimes decrease perceived value due to potential conflicts or misunderstandings, the overall impact of effective dialogue is positive. The DART model identifies dialogue as a fundamental element linking consumers to firms, emphasizing that meaningful interactions can lead to better mutual understanding and collaboration (Prahalad & Ramaswamy, 2004a). Furthermore, effective dialogue helps build trust and long-term relationships, which are critical

components of value co-creation. When companies actively listen to and act on customer feedback, they demonstrate commitment and responsiveness, enhancing trust and fostering loyalty (Prahalad & Ramaswamy, 2004a). This continuous feedback loop not only improves the immediate value co-creation outcomes but also strengthens the foundation for ongoing collaboration and value enhancement. Therefore, we propose the following hypothesis:

H1: Dialogue positively influences the value co-created by customers.

The second variable considered in this research model is access, which has been conceptualized as the ability of the value co-creation parties to obtain and use "information and tools" (Prahalad & Ramaswamy, 2004b, p. 7). Prahalad and Ramaswamy (2004a) illustrate access to information with customers tracking production progress online without going to the factory. Also, consumers need access to relevant information to participate in production (Prahalad & Ramaswamy, 2004a). This information is valuable for a better relationship between customers and a company (Garbarino & Strahilevitz, 2004). According to Sawhney et al. (2005), optimizing these tools through investments and technologies contributes to efficient collaboration because it permits interactivity between the customer and the company.

The co-creation process sees the company as an experienced provider for the consumer, which motivates said consumers to provide relevant information (Grönroos & Ravald, 2011). Thus, consumer participation in strategic value co-creation occurs through exchanging information and constructing experiences (Bolton & Saxena-Iyer, 2009). The association between co-creation and active participation by consumers implies more information about the company (Cova & Dalli, 2009). The disclosure of information by customers leads to a better understanding of their relationships with the company (Moon et al., 2019). By contrast, practices denying access to knowledge and information or disabling their exploitation may hinder strategic value co-creation (Cabiddu et al., 2019). Based on these previous studies, the following hypothesis was proposed:

H2: Access to information positively influences the value co-created by customers.

The model considered risk assessment as the third variable, which refers to evaluating "the probability of harm to the customer" (Prahalad & Ramaswamy, 2004b, p. 7). Risk plays a significant role in consumer behaviour, influencing information search and purchase decision-making (Masoud, 2013). Despite recognizing the benefits of using the Internet, consumers often feel uncertain about online transactions, perceiving them as risky (Lee & Tan, 2003). Perceived risk in online buying is defined as the potential loss in pursuing a desired result, combining uncertainty and the possibility of severe consequences (Ko et al., 2004). This concept has been extensively studied, with various scales developed to measure perceived danger (Featherman & Hajli, 2016). High levels of perceived risk can significantly reduce consumers' willingness to purchase products online (Barnes et al., 2007). In online commerce, perceived risk negatively impacts purchasing behaviour, attitudes towards usage, and the intention to adopt online platforms (Zhou et al., 2008). Without a physical environment, customers cannot directly assess product quality, engage in personal interactions, and feel secure about payment processes. Additionally, they face the costs of learning how to navigate online systems (Jain & Jain, 2015). These factors contribute to the perception of online commerce as risky for some customers. Conversely, other consumers appreciate online commerce's advantages, such as real-time information availability for product and price comparisons (San Martín & Camarero, 2009). Featherman and Hajli (2016) highlight that consumers are more concerned about perceived risks than usability when contracting services online. This heightened concern about risk over usability indicates that risk assessment is critical in shaping consumer behaviour in online environments. When consumers perceive high levels of risk, they are less likely to engage in value co-creation activities, as their focus shifts towards mitigating potential adverse outcomes rather than collaborating and innovating with firms. Therefore, practical risk assessment and mitigation are crucial for fostering value co-creation online. Companies must implement robust risk management strategies to alleviate customers' concerns, enhancing their willingness to participate in value co-creation processes. These strategies include ensuring secure payment systems, providing transparent information about products and services, and offering reliable customer support. The literature indicates that perceived risk negatively influences consumer behaviour

and attitudes in online commerce. Given the importance of risk assessment in shaping these perceptions, we propose the following hypothesis:

H3: Risk assessment negatively influences the co-creation of value by customers.

Transparency has been conceptualized as the result of symmetric information-sharing processes between customers and firms involved in strategic value co-creation (Prahalad & Ramaswamy, 2004a). This concept emphasizes the importance of open and honest communication, where both parties exchange information with equal clarity and accessibility. Ballantyne and Varey (2006) argue that customers require a degree of fair reciprocity in their dialogue with companies, meaning that the information shared with consumers must be as clear and understandable as what they share with the organization. This reciprocity builds trust and fosters a collaborative environment, which is essential for effective value co-creation. Consequently, companies can no longer operate with opaque pricing and profit margins (Prahalad & Ramaswamy, 2004a). Instead, they must ensure that information is accessible and transparent, providing customers with the knowledge they need to make informed decisions. Garbarino and Strahilevitz (2004) highlight that information transparency offers a competitive advantage to companies, as it enhances customer trust and engagement. Customers who perceive that a company is transparent are more likely to feel confident in their interactions and transactions. This confidence encourages greater participation in co-creation activities, as customers are assured that their contributions are valued and that they clearly understand the processes involved. Transparency not only facilitates participation but also enables continuous feedback. Open information channels allow customers to provide feedback on products and services, which companies can use to make improvements and innovations. This ongoing feedback loop enhances value co-creation by ensuring that the products and services align with customer needs and preferences. Furthermore, transparency in information-sharing helps mitigate uncertainties and reduces perceived risks associated with online transactions. When customers have clear and accurate information about products, services, and company practices, they are less likely to perceive high levels of risk, promoting a positive co-creation experience (Masoud, 2013). This reduced perceived risk is crucial for fostering an environment where customers feel comfortable engaging in value co-creation activities. Transparency is vital in strategic value co-creation by promoting open communication, building trust, enabling continuous feedback, and reducing perceived risks. These elements are essential for creating a collaborative environment where customers feel empowered to contribute to the value co-creation process. Therefore, we propose the following hypothesis:

H4: Transparency positively influences the value co-created by customers.

Considering the significance of reputation in the banking industry, it is crucial to explore the factors influencing a company's reputation, including value co-creation. Value co-creation, as proposed by Vargo and Lusch (2008, 2011, 2016), is centred on active customer interaction with the company. This collaborative interaction creates value, such as a reputation and personalized customer experiences (Prahalad & Ramaswamy, 2004a). From this perspective, it is worth investigating whether the value co-creation process between retail banks and their customers contributes to a more robust company reputation. Traditionally, company reputation has been studied as a determinant of value co-creation. Scholars have focused on examining the effective management of customer relationships, which results in a long-term competitive advantage in the long term (Nguyen et al., 2022).

Conversely, pursuing a high company reputation may require increased investments in new IT solutions to maintain a competitive edge, potentially affecting short-term profits and hindering the economic value generation from assets (Eccles et al., 2007; Nguyen et al., 2022).

Consequently, a recent line of literature has shifted its perspective to analyzing value co-creation as an antecedent of company reputation (Martillo Jeremías & Polo Peña, 2021). For instance, recent studies have demonstrated that customer value co-creation positively impacts a company's reputation by fostering a customer-centric organizational culture and delivering enhanced customer experience (Foroudi et al., 2019). A company's reputation is further solidified by fulfilling promises to stakeholders and meeting their expectations (Ponzi et al., 2011). Through customer value co-creation, companies can exhibit their dedication to delivering value to customers and stakeholders, strengthening their reputation as

customer-centric and responsible organizations (Martillo Jeremías & Polo Peña, 2021). Ultimately, co-creation initiatives empower customers to actively participate in the value-creation process, enabling companies to tailor their offerings to meet specific customer needs and preferences, thus improving their reputation (Pera et al., 2016). However, despite the importance of identifying antecedent variables of reputation, such as value co-creation, a gap exists in the literature regarding how value co-creation positively influences banks' company reputation. Based on these studies, the following hypothesis was proposed:

H5: Customer value co-created is positively related to company reputation.

Customer trust, a fundamental belief in the dependability, honesty, or competence of a person or entity, emerges as a crucial emotion resulting from the interaction between banks and their customers during the value-formation process (Frau et al., 2023a, 2023b). Customers trust service providers when they are assured that their sensitive information remains secure (Parasuraman et al., 1985). To establish trust, companies must commit to matters relevant to the customers' value co-creation process and then fulfil those commitments (Yap et al., 2010).

Research indicates that higher customer co-creation increases trust between companies and their customers (Lundkvist & Yakhlef, 2004). Scholars support this view by suggesting that value co-creation significantly influences trust because it helps mitigate risks arising from open information exchanges between partners (Ayuni & Engriani, 2019). Companies create connections between their employees and customers through value co-creation and work together in harmony. This involves not only listening to customers but also taking action based on their suggestions (Lundkvist & Yakhlef, 2004).

A crucial aspect of value co-creation is communication between the parties involved, serving as a platform for developing a shared understanding and exchanging knowledge related to each other's activities, generating mutual trust (Lundkvist & Yakhlef, 2004). Based on these findings, the last hypothesis of this study is as follows:

H6: Customer value co-creation is positively related to trust.

From the analyzed literature and the six suggested hypotheses, we propose the following model of online banking customers' value co-creation towards reputation and trust development (see Figure 1).

4. Methodology

4.1. Population, sampling procedure and sample adequacy

The population must be consistent with the proposed study's objectives to ensure the research's effectiveness. In the research context, the population is not finite, it is challenging to quantify, and it has over 100,000 units. It consists of customers who regularly use online banking services and have a stable relationship with an important Spanish bank, Caixa Bank.[1]. The primary reasons for selecting this bank include the proprietary nature of the information, the specific strategic initiatives of this bank in the realm of value co-creation, and the depth of data we could access. This bank's unique practices provided a rich context for addressing our research questions in detail. The respondents' knowledge level limits this sampling frame regarding the organization and the tools available for value co-creation. The survey

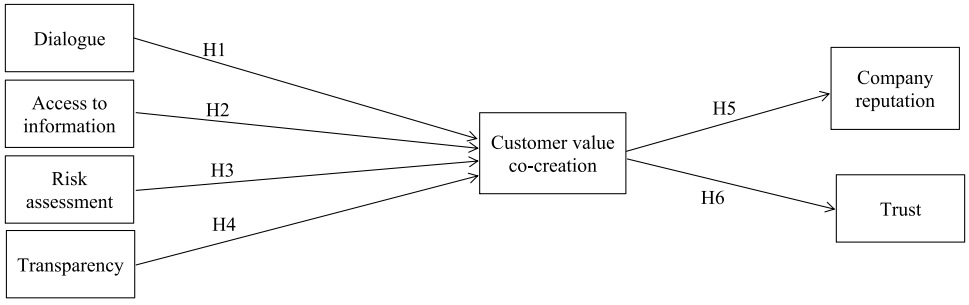


Figure 1. Conceptual model: towards the reputation and trust development.

was sent to all private customers of an important bank outlet in Valencia, Spain's third most populated city, who appeared in its database whenever they used online banking services. Ethical approval was obtained from the University of Valencia ethics committee for the study. 243 clients answered the questionnaire, of which 26 were discarded because of incorrect responses. Written informed consent for participation in the study has been obtained. Therefore, the final sample of 217 clients is not probabilistic, although big enough to be proportional, as well as representative of the outlet's customers, as it meets the criteria and weight of gender, age, educational level, income, and employment situation of the bank's clients (see Table 1). Therefore, the sample was understood as non-probability judgmental sampling (Etikan & Bala, 2017).

To determine whether this sample size was sufficient for the study's objectives, both Chin's (1989) minimum sample size criteria and the results of the applied power test using GPower 3.1, described later in the section, confirmed a sufficient sample size. Data were collected through online questionnaires sent to mobile phones during February and May 2022 and June–July 2023.

The key respondents were 62.08% males and 37.92% females. Respondents were under the age of sixty-five, and most of them were between 26 and 55 years old. In addition, most respondents had a university degree or higher (77.43%). Three-quarters of the sample is actively working. Regarding average income, 40.20% of those surveyed were within the range of 24,001–48,000 euros (see Table 1).

4.2. Measurement scales

The survey included measures of the key constructs of the DART model: dialogue, access, risk assessment, and transparency. These form the second-order construct of value co-creation. A repeated indicator procedure was applied (Lohmöller, 1989). In addition, the survey comprised measurements of the dependent constructs of trust and company reputation. Each construct was measured with multiple items using a five-point Likert scale with anchors for all items (see Tables 2–4). The questionnaire was tested using a two-step process. First, two academics with more than 20 years of experience in academic research conducted a semantic review of the questionnaire. They identified sentences that might confuse or tax respondents' patience. Second, a convenience sample of 20 bank customers completed the questionnaire. They pinpointed all unclear, illogical, or problematic sentences to respond to.

Table 1. Key characteristics of the customers in the sample (n = 217).

Customers characteristics	Percentage
Gender:	
Female	37.92
Male	62.08
Age:	
16–25	1.07
26–35	21.40
36–45	31.66
46–55	23.70
56–65	14.15
Over 65	8.02
Educational level:	
No formal education/studies	0.89
Secondary education (*ESO*)	4.75
Spanish baccalaureate/vocational education	16.93
Higher education	77.43
Occupation:	
Actively working	74.62
Student	2.26
Unemployed	8.62
Retired	11.33
Homemaker	3.17
Average income:	
Less than 12,000 euros	16,12
12,001–24,000 euros	20,92
24,001–48,000 euros	40,20
Over 48,000 euros	22,76

Table 2. Source of the scales.

Independent factors	Scales and sources
Dialogue	DART model (Albinsson et al., 2016)
Access to information	
Risk assessment	
Transparency	
The reputation of the company	Agency theory (Jensen, 1986)
REP1 – The banking service has quality	
REP2 – The bank's after-sales service has quality.	
REP3 – The banking production process has quality.	
REP4 – The entity offers its users services resulting from research and development.	
REP5 – The entity offers its users innovative products.	
Trust	Service-dominant logic (Vargo & Lusch, 2004)
TRU1 – I am worried that the service in the bank is not good.	
TRU2 – Sometimes you can't trust this bank.	
TRU3 – I'm worried that the banking service isn't worth it.	
TRU4 – I'm worried that my stake in this bank isn't worth it.	

Table 3. Albinsson's items.

Items	
DIA4 – The provider communicates with the customer to receive input on improving the service/product experience.	ACC1 – It is easy for the customer to receive the service/ product offering when, where and how he/she wants it.
DIA5 – The provider is interested in communicating the best ways to design and deliver a quality service/product experience to the customer.	RIS2 – The provider provides the customer with comprehensive information about risks and benefits assessed for the service experience or product.
DIA6 – The provider uses multiple communication channels to encourage a greater exchange of ideas with the customer about the service/product experience.	RIS1 – The customer receives comprehensive information about the risks and benefits of the service/product experience.
DIA3 – The provider and the customer actively discuss adding value to the service /product experience.	RIS4 – The provider fully informs the customer about all risks stemming from product or service use.
DIA9 – The customer is encouraged to communicate with the provider about all service/product experience aspects.	RIS5 – The provider is clear and factual about the negative and positive factors associated with the service/ product offering.
DIA7 – The provider uses multiple lines of communication to gather input and ideas from the customer.	RIS6 – The provider allows the customer to make informed decisions regarding the risks and benefits of the product/service experience.
DIA8 – The provider actively promotes dialogue with the customer to learn more about the customer's reaction to the service/ product experience.	RIS3 – The provider encourages the customer to familiarize himself/ herself with the risks associated with the service/product experience.
DIA2 – The customer has many opportunities to share his/her ideas with the provider about adding value to the service/provider experience.	TRA2 – The provider fully discloses to the customer information, which might be helpful to improve the outcomes of the service/ product experience.
DIA1 – The provider makes it easy for the customer to communicate his/her ideas about the design and delivery of the service/product experience.	TRA3 – The customer is given access to information that might enhance the overall design and delivery of the service/product experience.
ACC3 – The provider lets the customer decide how he/she receives the service/product offering.	TRA4 – The customer and provider are treated as equal partners in sharing information needed to achieve a successful service/product experience.
ACC2 – The customer has many options to choose how he/she experiences the service/ product offering.	TRA1 – The provider fully discloses to the customer detailed information regarding the costs and pricing associated with the design and delivery of the service/ product experience.

Source: DART scale development: diagnosing a firm's readiness for strategic value co-creation of Albinsson et al. (2016).

4.3. Exploratory factor analysis

To identify the underlying structure of the dimensions, we performed an exploratory factor analysis by applying a principal component analysis using SPSS version 28. We subsequently checked the model using the SMART PLS version 4 software (Hair et al., 2019; Ringle et al., 2022). We used partial least squares (PLS) for two reasons. First, this study mainly aims to analyze the predictive capacity of a model composed of two dependent constructs (company reputation and company trust) and maximize their explained variance by one predictive variable: value co-creation, a second-order construct formed by the variables dialogue, access to information, risk assessment, and transparency). Second, a small sample size was available, although it was sufficient.

Factor analysis showed an adequate and clear underlying factor structure that identified five factors with eigenvalues greater than 1.0, which accounted for 77.16% of the variance. Oblimin rotation was selected because the factors are not independent, and some correlation exists between them. Bartlett's test of sphericity was statistically significant ($\chi 2 = 5381{,}26$; $p < 0.001$), and the Kaiser–Meyer–Olkin measure

Table 4. Principal components analysis results.

	Components and corresponding variance explained				
Components and items	1 (8.67%)	2 (4.72%)	3 (5.98%)	4 (5.43%)	5 (8.16%)
Access to information					
ACC1		,568			
ACC2		,771			
ACC3		,919			
TRU1		,925			
Dialogue					
DIA1			,833		
DIA2			,865		
DIA4			,776		
DIA8			,764		
DIA9			,744		
Reputation & Trust					
REP1	,915				
REP2	,870				
REP3	,898				
REP4	,788				
REP5	,738				
TRU3	,931				
Risk					
RIS1					-,889
RIS2					-,864
RIS4					-,896
RIE5					-,809
RIS6					-,810
Transparency					
TRA1				,940	
TRA2				,789	
TRA3				,633	
TRU2				,923	

Oblimin rotation with Kaiser normalization.
KMO= .89; Bartlett's test: χ^2=5381,26 ; gl = 276; p < 0.001.
Explained variance = 77.16%.

of sampling adequacy was 0.89, exceeding the minimum threshold of 0.50, as proposed by Kaiser (1974). Before applying PCA, some items from the scales were dropped because the reliability and quantity of items matter. In the Dialogue scale, items 3, 5, 6, and 7 were dropped; in the risk scale, item 3 and the transparency scale, item 4 were also dropped. The composition of the components is shown in Table 4. As seen in Table 4, the three items in the trust scale do not compose an individual factor because they weigh in three other factors: Accessibility, Transparency and Reputation. Therefore, the access to information factor is composed of four items, including TRU1, which is composed of five items; the reputation factor is composed of six items, including TRU3; the Risk factor is formed of five items, and four items, including TRU2, form the transparency.

This structure changes the previous conceptual model structure shown in Figures 1 and 2. Now, the latent variables' access to information, Dialogue, Risk and Transparency measure the second-order construct Value Co-Creation (VACOCRE), and the latter affects reputation (see Figure 2).

4.4. Reliability and validity of the measurement instrument

Depending on the number of relations that need to be evaluated, an initial concern relates to the sample size. According to Chin (1998), the overall sample size must be ten times the largest of the two possibilities: (1) the factor that has the largest number of indicators or (2) the dependent factor that is affected by the largest number of independent factors. In our model, the first possibility was equal to six (reputation and trust), while the second was equal to four (the number of factors directly forming value co-creation). Accordingly, the minimum sample size was 60, and the sample included 217 cases. Additionally, we calculated the test power for the dependent variable (R2) for one predictor (α= .01, and a low effect size (0.10). The minimum level for the social sciences is 0.8. The result showed a test power (1-β) of over 0.97 for a sample size of 217 (df = 215; 1-β = 0.979).

Reliability, validity, and the hypothesized structural equation model were assessed using SmartPLS 4.0 (Ringle et al., 2022). Measurement scale reliability was assessed using Cronbach's alpha (CA) as the

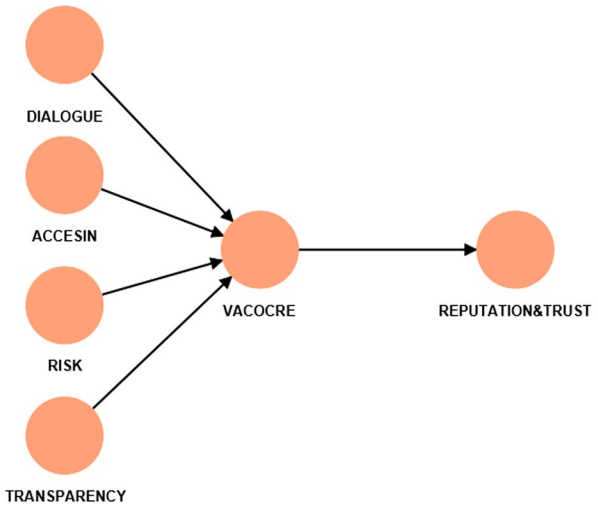


Figure 2. Resulting model based on the exploratory analysis.

Table 5. Reliability and convergent validity of the model.

Factor	Item	Loadings	Cronbach's alpha CA	Composite reliability CR	Average variance extracted AVE
VALCOCRE	–	–	–	0.922	0.725
Dialogue	DIA 1	0.795	0.871	0.906	0.659
	DIA 2	0.806			
	DIA 4	0.820			
	DIA 8	0.823			
	DIA 9	0.817			
Access	ACC 1	0.735	0.847	0.898	0.689
	ACC 2	0.758			
	ACC 3	0.896			
	TRU1	0.916			
Risk assessment	RIS 1	0.891	0.921	0.940	0.760
	RIS 2	0.833			
	RIS 4	0.903			
	RIS 5	0.866			
	RIS 6	0.864			
Transparency	TRA 1	0.924	0.911	0.938	0.791
	TRA 2	0.901			
	TRA 3	0.803			
	TRU2	0.924			
Reputation and trust	REP 1	0.899	0.939	0.952	0.769
	REP 2	0.887			
	REP 3	0.904			
	REP 4	0.843			
	REP 5	0.812			
	TRU 3	0.868			

standard criterion (Nunnally & Bernstein, 1994). However, since CA tends to underestimate the internal consistency in PLS (Werts et al., 1974), we also checked composite reliability (see Table 5). For CA and CR, all scores were over 0.84, higher than the minimum threshold of 0.7 (Bagozzi & Yi, 1988; Nunnally & Bernstein, 1994).

To evaluate convergent validity, a bootstrap test was conducted over 5,000 resamples, with no sign of change in resampling. We then compared the results with sign changes at the construct level and individual changes. We used the one-tailed test with a significance level of 0.05. As can be seen in Table 5, all items loaded above 0.7 in terms of their respective reflective constructs (Hair et al., 2014). Convergent validity within the reflective constructs was assessed using average variance extracted (AVE). The results showed scores higher than the minimum threshold of 0.5 suggested by Bagozzi and Yi (1988) and Hair et al. (2012) (see Table 5).

Regarding discriminant validity and following the criteria proposed by Fornell and Larcker (1981), we calculated the square root of each latent variable's AVE. These should be higher than the correlations

between the latent variables. As shown in Table 6, this criterion was met by the data. In addition, we ran the heterotrait–monotrait ratio (HTMT) to test discriminant validity (Henseler et al., 2015). All the HTMT ratios in absolute value were below the threshold of 0.90, even below 0.85, which indicated that discriminant validity exists between the reflective factors (see Table 6).

These results indicate satisfactory reliability and convergent and discriminant validity of the measurement model's variables and constructs.

5. Results

To assess the structural model, we observed the dependent latent variable variance, explained by the predictive factor. The criterion to apply is R^2, which must be higher than 0.1 (Falk & Miller, 1992). In addition to R^2, we checked the significance of the path coefficients using their respective t-values (Hair et al., 2012). Finally, we assessed the cross-validated redundancy index (Q^2) by blindfolding (Geisser, 1975), which, together with R^2, informed on the predictive capacity of endogenous factors, with values above zero, indicated a clear predictive relevance of the model (Chin, 1998; see Table 6). The VIF indicator for the inner model is less than five and higher than 0.20, which is the recommended range according to Hair et al. (2011). Specifically, the VIF for the independent constructs is 1.496 (ACCINF), 1.768 (DIALOGUE), 2.645 (RISK), and 1.970 (TRANSPARENCY); all values are less than 3, which is ideal, according to Hair et al. (2019). Therefore, collinearity between the independent constructs was not observed.

The empirical results support four hypotheses about customer value co-creation and one about the effects of value co-creation on company reputation and trust (see Figure 3 and Table 7). The first four hypotheses are as follows: H1 ($\beta = 0.291$; $p < 0.001$) shows that dialogue significantly and positively influences customer value co-creation. The same is true for H2, where access to information significantly and positively explains customer value co-creation ($\beta = 0.230$; $p < 0.001$). In the case of H3, risk assessment, insofar as it implies information to be able to assess the risk of the financial service product adequately, positively influences value co-creation ($\beta = -0.394$; $p < 0.001$), with the variable having the highest effect on value co-creation. H4 shows transparency positively affects customer value co-creation ($\beta = 0.301$; $p < 0.001$). Finally, regarding H5, the results show that value co-creation affects reputation and trust in a company ($\beta = 0.769$; $p < 0.001$).

Regarding the proposed model and its predictive capacity, both R2, with a value of 0.591 and a Q2 of 0.580, show an explicit model predictive capacity. These results support that customer value co-creation in the banking sector has a relevant impact on a company's reputation and trust development.

6. Discussion

Studying dialogue, access to information, risk assessment, transparency, customer trust, and bank reputation is critical to understanding customer value co-creation in the bank setting. Such factors are especially paramount nowadays because customers can see bank operations in real time and have access to a personal manager through their mobile devices.

6.1. Theoretical implications

Regarding the research questions, this study makes two key contributions to the test and extant theory on customer strategic value co-creation in the banking context.

First, when conceptualizing the DART model, Prahalad and Ramaswamy (2004a) considered dialogue, access, risk assessment, and transparency as the fundamental pillars that allow the customer to co-create

Table 6. Discriminant validity. The HTMT ratio and the Fornell-Larker criteria are in brackets.

Construct	Dialogue	Access	Risk Assessment	Transparency
Dialogue	(0.812)			
Access	0.562 (0.498)	(0.830)		
Risk assessment	0.697 (0.628)	0.601 (0.536)	(0.872)	
Transparency	0.544 (0.489)	0.845 (0.411)	0.758 (0.698)	(0.889)
Reputation & Trust	0.607 (0.557)	0.656 (0.589)	0.729 (0.679)	0.717 (0.665)

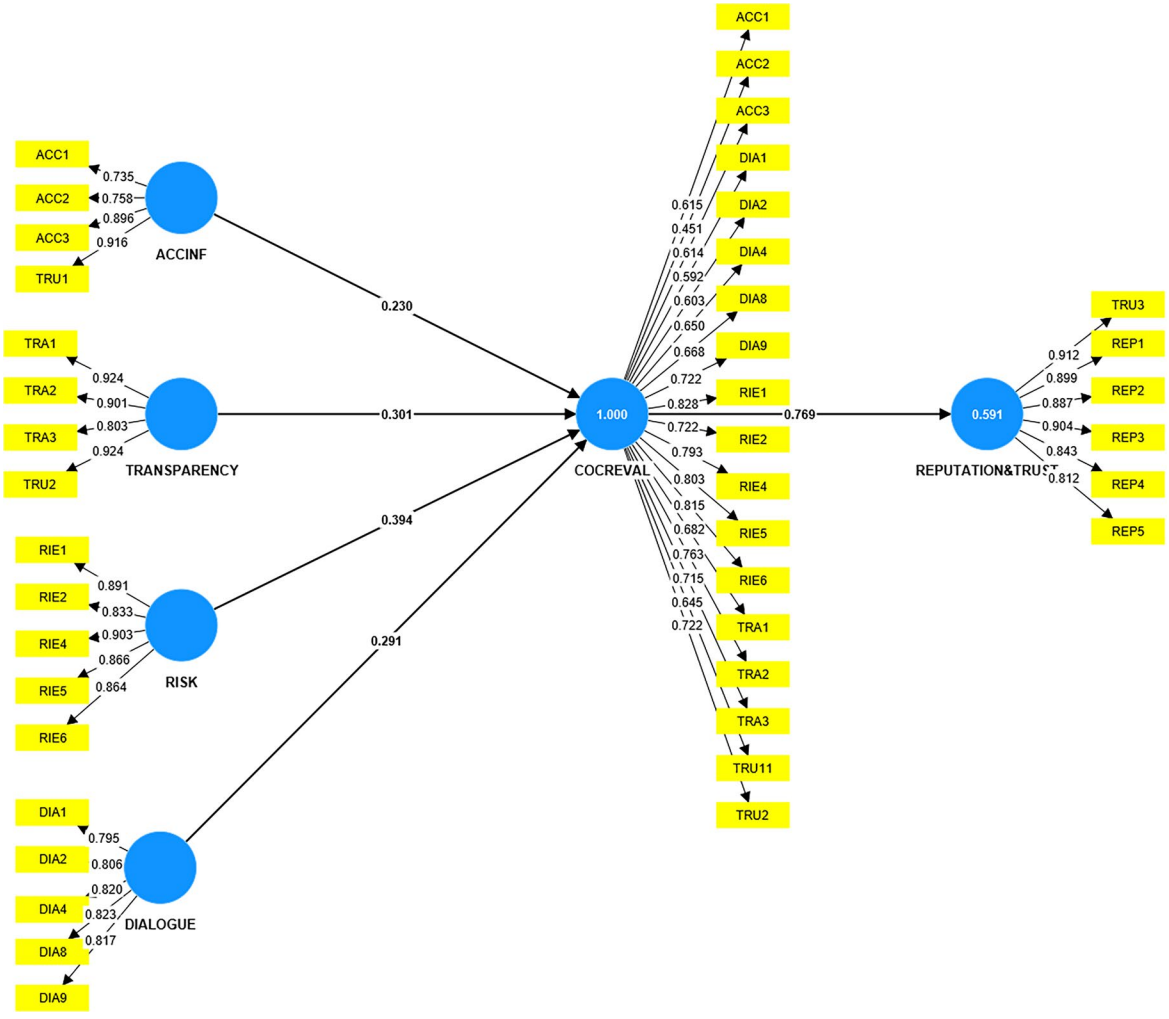


Figure 3. The structural model.

Table 7. Hypotheses testing.

Hypothesis	Standardized path coefficient	t-value (Bootstrap)	Result
H1: DIALOGUE→ value co-creation	0.291	14.110**	Supported
H2: INFORMATION ACCESS→ value co-creation	0.230	9.141**	Supported
H3: RISK →value co-creation	0.394	21.903**	Supported
H4: TRANSPARENCY→value co-creation	0.301	16.315**	Supported
H5: VALUE COCREATION → Reputation & Trust*	0.769	25.159**	Supported

*$\mathbf{R2} = 0.591$; $\mathbf{Q^2} = 0.580$; **$p < 0.001$.

strategic value with the company, keeping open the opportunity to further studies enriching their model with additional and industry-specific variables. This study attempts to extend the DART model by involving two significant strategic variables for customer value co-creation in the online banking industry: trust and reputation. The findings reveal that value co-creation significantly affects a company's reputation and trust. Therefore, this study supports the notion that the customer value co-creation process can develop a company's reputation and trust. Previous research has contributed in various ways to our understanding of customer value co-creation (Kucharska, 2017; Syah & Olivia, 2022) and online banking (Aldás et al., 2009). For instance, it highlights the significance of customers' trust in online settings and banks' reputations as essential prerequisites for strategic value co-creation (Dhaigude et al., 2023; McCormack & Deacon, 2017). Oklevik et al. (2024) also underscored the importance of the DART model elements in enhancing customer-brand interactions, providing a foundational understanding that further supports the role of trust and reputation as outcomes of value co-creation.

Furthermore, studies have shown that trust and company reputation are antecedents that positively influence customer value co-creation (e.g. Mostafa, 2020). Additionally, researchers have explored how trust mediates relationships with factors such as privacy risk, concern, and value co-creation (Wang et al., 2020). In contrast, our study extends the existing literature by demonstrating that constructive and collaborative relationships, along with resource integration, arise from the positive management of dialogue, access to information, risk assessment, and transparency between the bank and customers during the value co-creation process. These factors foster long-term relationships and build customer trust and reputation. Consequently, customers' trust and company reputation can be seen as direct outcomes of a successful value co-creation strategy in online banking.

In conclusion, building upon the original DART model and existing research on the relationships between customer trust, company reputation, and customer value co-creation, this article contributes to the strategic marketing literature by highlighting that the value co-creation process can yield reputation and trust as outcomes. Traditionally, trust and company reputation have been seen as antecedents that positively impact customer value co-creation (Mostafa, 2020). Our research, however, shifts this perspective by showing that effective value co-creation can enhance reputation and trust. Consequently, we propose that customers' trust and company reputation should be recognized as direct outcomes of successful value co-creation strategies in online banking. By adopting this innovative approach, our findings offer fresh insights into the complex relationship between value co-creation and its outcomes.

Second, the DART model has been studied in several settings. For example, the DART model has been employed in the pop-up retail sector in Italy (Russo Spena et al., 2012) and the fashion industry, showing how Nike co-created strategic value with customers (Ramaswamy, 2008). However, there is a lack of studies that employ the DART model in banks (Banik & Rabbanee, 2023), especially in the online banking setting. Therefore, this study suggests four hypotheses for testing the DART model in an online bank setting. Hypotheses involving dialogue, access to information, risk assessment, and transparency are accepted. Thus, the present study's findings show that the DART model works successfully in the online banking industry. This result extends the current literature that tested the DART model in an offline context (e.g. Banik & Rabbanee, 2023). Therefore, this study provides a broader vision of the DART model, including banks' online customers.

6.2. Management implications

Vale co-creation is pivotal to online banking. Therefore, this study provides managerial and strategic suggestions for each variable involved in the DRAT model: customer trust and bank reputation.

Dialogues require active attitudes from both customers and banks. From the banks' point of view, as a minimum requirement, they must inform customers about products and services at the time of their launch. However, a more advanced practice requires banks to encourage customers to participate in the product innovation process, clearly informing them of their role in innovation and their benefits. This will efficiently impact customers' co-creation engagement and increase value.

Access refers to tools and information that facilitate collaboration in strategic value co-creation. For this reason, banks must provide sufficient means for customers to facilitate collaboration. For example, banks may invest in digital platforms to allow customers to collaborate remotely in the innovation process without going to the bank's office. In addition, banks may develop procedures to allow customers to collaborate whenever they want.

Risk assessment is based on identifying, analyzing, and controlling unforeseen events that may arise when co-creating. Therefore, banks must identify what customers recognize as risky in collaboration. Banks need to take action to resolve each customer-perceived unsafe aspect of the collaboration and quantify the possibility that unforeseen events occur and their impact on co-creation. Banks may also be proactive in quantifying the possibility of unforeseen risky events to guarantee a smooth value co-creation strategic process with customers.

Transparency, which refers to information equality between the customer and company, occurs when banks strategically communicate the value they aim to gain in the collaborative process. This also means being open to consumer criticism, which requires negotiation. Thus, banks must be ready to be asked and share collaboration and project development data.

Finally, dialogue, access, risk assessment, and transparency are crucial in promoting online value co-creation. Additionally, marketing planners must consider that successfully managing the value co-creation process results in greater customer trust and bank reputation. Thus, developing reliability policies based on best collaboration practices and banks' ability to place customers in the centre of value co-creation processes increases bank reputation and customer trust.

6.3. Limitations and future lines of research

This study shows findings from an underexplored perspective of online-back customers. While it demonstrates the key role that DART variables play in customer value co-creation and how it results in customer trust and bank reputation, it also has a few limitations.

This study was based on homogeneous survey respondents. For example, data collection is based on customers from only one bank, Caixa Bank, and only one country, Spain. We acknowledge that collecting data from a single bank limits the generalizability of our findings. We discuss the potential biases introduced by this approach. This enhanced discussion aims to give readers a clearer understanding of the study's boundaries and encourage future research to build upon our findings with a broader dataset.

Note

1. According to the magazine Global Finance, Caixabank has been the First bank in Spain for the last eight years and the best West European bank for the fourth time in 2022 (Press notice, Caixa bank, 13/04/2022; http://www.ciaxabank.com/comunicacion/noticia/caixabank-elegido-mejor-banco-en-espana-2022-y-mejor-banco-en-europa-occidental-2022-por-la-revista-global-finance_es).

Authors' contributions

Marcelo Royo-Vela: conception and design, analysis and interpretation of the data, methodology, visualization, writing – original draft, writing – review & editing, supervision. Moreno Frau: conceptualization, methodology, investigation, writing – original draft, writing – review & editing, project administration. Alberto Ferrer: conception and design, data curation, visualization, writing – original draft. All authors approved the final version of the article to be published and agreed to be accountable for all aspects of the work.

Disclosure of interest

The authors reported no potential conflict of interest.

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Data availability statement

The data supporting this study's findings are available upon request to the email address marcelo.royo@uv.es.

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