

## RESEARCH ARTICLE

# Market orientation, restructuring and collaboration: The impact of digital design on organizational competitiveness

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Design is commonly understood as a key element of products, contributing to their distinctiveness, usability and aesthetics. The success of a product is increasingly related to the user experience or the aesthetics of the user interface, meaning that design is increasingly important in the digital environment. The shift in competitive focus to the customer induced by digital design encourages companies to innovate and can also lead to changes in internal operations, market orientation and the reconfiguration of external collaboration procedures. This dimension of digital design-induced effects has to date seen very little research. The objective of this study is to investigate how digital design-induced changes in market orientation, internal restructuring and external cooperation affect firms' competitive orientation. The simultaneous equation framework was applied to a survey of 515 user interface and experience designers from France. Our results suggest that market orientation is not the only channel through which digital design influences firm competitiveness. Digital design leads to organizational change and the reconfiguration of external relationships that directly and indirectly help companies build competitive advantages and increase customer satisfaction.

## KEYWORDS

collaboration, competitiveness, digital design, market orientation, restructuring

## 1 | INTRODUCTION

The market superiority of companies is commonly associated with the distinctiveness and innovation of their offerings. The literature associates these with technological innovations (Stojčić, 2021), efficiency improvements (Kumar, 2009) or changes in business models (Amit & Zott, 2012). They can also relate to product desirability, aesthetics, symbolism, ease of use and emotional value for the end consumer (Homburg et al., 2015; Micheli et al., 2012; Ravasi & Stigliani, 2012). The latter is often referred to as *product design* (Chouki et al., 2021; Tabeau

et al., 2017), which gives products sociocultural or symbolic meaning (Verganti, 2009), helps companies increase value for users by reinforcing their own brands and identities (Czarnitzki & Thorwarth, 2012), fulfils customers' desires (Walsh, 1996) and can even help respond to crises (Cankurtaran & Beverland, 2020) and increase agility (Chouki et al., 2021). For all these reasons, design functions as an important strategic business asset (Wrigley, 2016) for modern companies, leading to higher sales, exports and market shares (Tabeau et al., 2017).

Design is widely considered as a strategic business asset and explored in the literature. Scholars however disagree on its importance

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(Walsh, 1996). Today, design is crucial for both traditional and digital companies to understand and better manage different types of digital innovation in order to cope with environmental disruptions in digital terms (Wang, 2021). Early studies considered design as part of the innovation process bridging the gap between technological advances and user desires (Freeman, 1983). Within organizations, the shift towards design-driven innovation (Verganti, 2006) facilitates the linking of various internal and external resources, such as production, research and development (R&D), marketing departments (Micheli et al., 2018), suppliers and customers (Walsh, 1996). This in turn improves intradepartmental coordination, knowledge sharing and technology transfer, as well as the reconfiguration of external relationships (Borja de Mozota, 2002). However, the strategic role and value creation potential of design are not always recognized (Hertenstein et al., 2005), meaning there is a need to quantify the contribution of each channel through which design contributes to business success.

Auernhammer and Roth (2021) have taken a complementary approach to other design evolution theories. These authors give a design-centred perspective on innovation, emphasizing aspects of attitudes and organizational context that go beyond the aesthetic and resolution aspects of design. Design thus becomes an entrepreneurial and value-creating practice that strengthens a user-centred approach, improves corporate culture and increases innovation in the market (Artusi & Bellini, 2020; Magistretti et al., 2022). This literature pursues a similar argument to the studies mentioned above by emphasizing the need to highlight the role of the individual channels through which design and design thinking help organizations to achieve their innovation outcomes (Magistretti et al., 2022). It is thus evident that, when it comes to understanding how design influences organizational behaviour and performance, there is still a gap in the literature, and our study aims to fill that gap.

Recent digital advances have transformed the process of service creation and the nature of innovation in organizations (Kretschmer & Khashabi, 2020). Environmental stimuli originating in systems and algorithms have taken over the role of human-driven business processes (Magistretti et al., 2021) and become more relevant to purchasing behaviour than in physical settings (Reydet & Carsana, 2017). As a result, a humanistic and creative approach to design is increasingly combined with a digital and experience-based approach (Auernhammer & Roth, 2021). Design thinking becomes a way to solve problems and to respond to user desires while taking into account economic constraints and technological feasibility (Magistretti et al., 2021). Design helps organizations to understand consumer needs and influence the organizational structure, business and strategic functions and subsequently to shape the value creation process. Therefore, design is considered as a practice that seeks to delineate product attributes and especially define functionality for users (D'Ippolito et al., 2014; Utterback et al., 2006).

The increasing relevance of user experience and easy interaction in the digital environment forces companies to place greater emphasis on digital design (Sayar & Er, 2019). This kind of design opens new ways to reach, inform, engage, sell to, learn about and provide services to customers (Sahut et al., 2020). Its efforts to make attractive, easy-

to-use products require user involvement from the early stages of design process, thus reconfiguring internal and external organizational processes (Verganti et al., 2020). Digital design is therefore often referred to as User eXperience (UX) and User Interface (UI) design (Chouki et al., 2020; Gothelf & Seiden, 2017). Digital design involves complex collaborations between the various actors in the innovation process (Calabretta & Kleinsmann, 2017) and helps organizations to better meet consumer needs by optimizing human-computer interaction (Magistretti et al., 2022; Wattanasupachoke, 2012). Consequently, the impact of digital design on firm competitiveness goes beyond the core innovation development.

Empirical research is scarce on the role of digital design in building competencies and organizational competitiveness. It is believed that consumers perceive value differently in a digital environment (Magistretti et al., 2020) because they experience stronger pleasure stimuli and affective experiences (Reydet & Carsana, 2017). This leads to a restructuring and reconfiguration of internal (Kretschmer & Khashabi, 2020; Magistretti et al., 2020) and external organizational processes (Winby & Mohrman, 2018) that help companies successfully deal with the increasing complexity of the digital environment, which suggests that design could play a stronger role in firms' innovation success, competitive advantage and user satisfaction. However, research has yet to clarify the channels through which this impact is achieved.

With this in mind, we propose a model that defines the main channels for digital design's impact on the development of customer-centric competitiveness as the transformation of market orientation, internal restructuring through greater interdepartmental collaboration and the reshaping of external relationships. Specifically, we argue that through these processes, UI/UX design helps companies transform business processes and develop key competencies and competitive advantages for a stronger customer orientation in innovation policy, as well as a higher perceived value of their offerings to consumers. This argument draws on a combination of traditional design literature and several recent contributions highlighting the impact of digital transformation on organizational behaviour. Our model builds on the proposition that digital transformation, embodied in digital design, touches the foundations of the organizational innovation process (Magistretti et al., 2020). We furthermore hypothesize that digital design enhances innovation by opening new markets and bringing in new products, and facilitating technology transfer while making products difficult to imitate.

The literature also suggests that digital transformation is changing the way work is performed (Winby & Mohrman, 2018), and altering the way organizations define, divide and group the subtasks required to achieve an expected output (Kretschmer & Khashabi, 2020)—while at the same time changing organizational activities, processes and capabilities (Magistretti et al., 2021). To this end, our model suggests that digital design-driven innovation changes the mindset, business processes and interdepartmental coordination of organizations. Finally, we argue that the shift to digital design-driven innovation leads to a reconfiguration of external relationships by opening up space for co-creation and collaboration (Henfridsson et al., 2018). While all these channels lead to shift in competitive focus, we hypothesize that internal restructuring and external relationships also have

indirect effects through their influence on the changes in market orientation.

The analysis is based on a 2020–2021 survey of 515 French digital UX/UI designers who were asked to evaluate the contribution of digital design to the organizations they work with. To evaluate the multiple relationships between variables, we analyse the data via structural equation modelling (SEM). The study shows that digital design contributes to market performance by opening up new markets, making products more distinctive and facilitating technology transfer. However, it also leads to internal changes and the reconfiguration of external relationships. This, in turn, directly and indirectly (through its influence on the core innovation development process) helps firms build competitive advantages and increase customer satisfaction.

Our study has implications for both research and practice. From a research perspective, it offers new insights into the design–performance relationship that is particularly appropriate for digital environments. It shows that in digital environment, design influences performance through at least three channels and that some of these channels reinforce others. From a practical perspective, the study suggests that organizations seeking to improve performance in the digital environment should also allocate resources to reorganizing internal structures and processes and reshaping external relationships. As far as we know, there have been no previous attempts to study the impact of digital design on corporate competitiveness from this perspective.

The remainder of the article is organized as follows. The next section provides the theoretical underpinnings and hypothesis development of our investigation. The sample characteristics and methodology are discussed in Section 3. Section 4 presents the results of the empirical analysis, while Section 5 provides concluding remarks.

## 2 | CONCEPTUAL FRAMEWORK

### 2.1 | Digital design as a market orientation catalyst

The distinctiveness of organizational offerings may stem from technological novelty, production process efficiency or business model innovation (Amit & Zott, 2012; Kumar, 2009; Stojic, 2021) and also from other product attributes, such as design (Tabeau et al., 2017). Traditionally, design has been considered a source of competitive advantage in the mature stages of industrial, technological or product life cycles (Vernon, 1979) and as a distinctive and market-dominating product feature to which all rivals must adhere (Nelson & Winter, 1982). Design endows products with favourable attributes of appearance, emotion, usability and functionality (Ravasi & Stigliani, 2012; Tabeau et al., 2017), thus helping firms meet customers' desires rather than their needs (Walsh, 1996). Today, companies are invited to better study users' expectations and involve them more in the design process (Kummittha, 2019).

In addition to the above, design is said to produce different ways of thinking, doing and tackling problems (Wrigley, 2016), changing not only the nature of innovation and the competitive focus but also the entire value creation process of an organization (Kretschmer &

Khashabi, 2020). By acting as a bridge between technological breakthroughs and market opportunities (Freeman, 1983), design becomes a catalyst for innovation that helps to transform organizational processes (Verganti, 2009; Verganti & Dell'Era, 2014). In this sense, Neate et al. (2019) note that some designers use techniques, sometimes adapted to the public, to involve users in innovation or technology development. In an innovation activity, Roper et al. (2016) point out that organizations that employ designers throughout the innovation process outperform those that involve designers in only a few stages. This is where the importance of the interaction between the designer and other departments within the organization becomes apparent.

For the above reasons, the understanding of design has shifted from an approach limited to product aesthetics towards a strategic activity that influences the long-term sustainability and competitiveness of brands and organizations through its influence on a diverse range of organizational activities (Dell'Era et al., 2020; Henseler & Guerreiro, 2020). This is complementary to Artusi and Bellini (2020) who argue that focusing design on customer experience aligns different organizational units involved in product development in a way that ensures that the desired meaning is delivered to the customers. As noted by Magistretti et al. (2022), the influence of design ranges from marketing, operations and innovation to human resources and internal functions, and it also influences the external relationships of organizations through activities such as branding and the communication process, design of human–machine interfaces, innovation strategy and action, and unleashing people's creative potential, which calls for evidence-based explanations of why and how different organizational functions attach increasing relevance to principles, methods and tools to practise design.

The innovation value of design arises from its power of differentiation through its influence on the perceived value, desirability and usability of a product (Noble & Kumar, 2010). This approach suggests that the integration of design in the business world necessarily involves good design management (Wolff & Amaral, 2016) and the ability to evaluate and quantify its contribution to the organization (Hertenstein et al., 2005). In one of earliest models of design-driven innovation management, Dickson et al. (1995) highlighted the importance of basic skills, special abilities, inclusiveness, organizational change and innovation skills. Building on these foundations, Fernández-Mesa et al. (2013) argued that design-driven innovation motivates organizations to build, integrate and reconfigure internal and external competencies (Fernández-Mesa et al., 2013). Within this kind of framework, design emerges as a generator of organizational dynamic capabilities (Teece et al., 1997). It only partly overlaps with traditional notions of innovation and also influences organizational performance through other, non-technologically innovative channels (Walsh, 1996).

The consumer perspective views design as a set of product elements that create value through emotion, aesthetics, identity, ergonomics and quality (Homburg et al., 2015; Luchs et al., 2016). Environmental psychology (Reydet & Carsana, 2017) links design to the sensory qualities of a product that can trigger affective responses, which in turn elicit an emotional purchase response and determine future attitudes towards a company. For these reasons, design can influence brand loyalty, the creation of new markets and the building of competitive

advantage (Kumar et al., 2015; Micheli et al., 2018; Wolff & Amaral, 2016). It follows that the management of the end user's interaction with the company and its range of goods and services, that is, the user experience, play a central role in customer satisfaction and loyalty to the brand or product, making design a strategic business asset.

All of these aspects can be even more important in a digital environment, which changes the innovation process by opening up new ways for the user to perceive products and enabling actions that are not possible in the physical world (Magistretti et al., 2020). At the same time, a digital environment has a much stronger impact on the affective experience and the motivation to spend money when consumers are exposed to positive user experiences in a virtual environment (Reydet & Carsana, 2017). This requires companies to look for new ways to maximize the user experience. In this process, the use of artificial intelligence in design decisions about product positioning, content creation and user interface presentation (Verganti et al., 2020) expands companies' potential innovation value paths into previously non-existent or emerging markets with value creation potential (Henfridsson et al., 2018).

It can be argued that design creates a competitive advantage by improving user satisfaction and perceived consumer benefits. As shown by empirical evidence in the recent literature review by Tabeau et al. (2017), this can lead to better sales, greater market shares or higher profit margins, along with the ability to enter new markets. One of the key channels through which this occurs is by changing the nature of the innovation process. The distinctiveness of the product opens up access to a wide range of markets, makes the product difficult for competitors to imitate and facilitates its introduction to the market. Design has furthermore been shown to facilitate external collaboration, paving the way for knowledge and technology transfer between firms (Walsh, 1996). For all these reasons, design has become a strategic resource for the marketplace success of products (Veryzer & Borja de Mozota, 2005) and for improving customer satisfaction (Noble & Phillips, 2004). Innovative design goes beyond securing the existing market from emerging competitors and enables companies to penetrate new markets (Bruce & Daly, 2007).

**Hypothesis 1.** Digital design influences the shift in companies' competitive focus to customers by opening access to new markets (restructuring of market orientation).

## 2.2 | Digital design as a facilitator of internal restructuring

Throughout the literature, design is referred to as an organizational catalyst of change (Wrigley, 2016). From this perspective, the role of design is to continuously explore, stimulate, challenge and disrupt internal organizational processes, restructure business activities and ensure the embedding of new and improved competencies and knowledge into organizational strategy. Closely adhering to the theoretical approaches of evolutionary economics (Nelson & Winter, 1982) and dynamic capabilities (Teece et al., 1997), design in this context becomes a source of refinement of organizational

routines in the face of the demands of a changing environment. Design transforms organizations by bringing capabilities to organizational behaviours that are not present or appropriately valued in the organization; it does so through a cross-functional collaboration that encompasses culture, structure, and external relationships (Wrigley, 2016). It follows that design-driven innovation contributes to organizational competitiveness not only through the transformation of innovation practices but also through internal restructuring manifested in cross-functional collaboration, knowledge transfer, and changes in organizational routines. In the same sense, internal design research departments allow designers' user knowledge to be developed from their findings, processes, and especially human resources. It also includes that the enhanced contribution of designers to the research process is most important given its involvement in contextual and collaborative learning about users (Oygur & Thompson, 2020).

The relevance of design for organizational change can also be observed through the concept of creative confidence (Kelley & Kelley, 2013). As noted by these authors, the inner desire to unleash creative confidence allows organizations and individuals to see new ways to improve the status quo and seize opportunities. This is particularly the case among designers who invest efforts into making conscious, original choices. Designers in such a framework emerge as identifiers of opportunities and catalysers of change. This comes from their strong creative confidence.

While driven by creative confidence, designers need resources from different departments, along with knowledge about organizational culture and practices (Czarnitzki & Thorwarth, 2012). Much of design activity draws resources from R&D departments by designing, constructing and prototyping new ideas (Walsh, 1996). It also opens new avenues to contextual and collaborative learning about users (Oygur & Thompson, 2020). At the same time, design contributes to the production and launch of new products, which requires the contribution of production departments. Finally, design activities include tasks such as packaging, advertising and branding for new and existing products and services, which build on input from marketing departments. As a result, design becomes a kind of coordinator of interdepartmental collaboration (Von Stamm, 2003), and a bridge between different organizational functions, facilitating the exploitation of synergies between organizational resources.

Cross-departmental collaboration enables the organization to see product development challenges in a broader context and better align organizational resources with user desires, creating value and improving market performance. This fosters a culture of collaboration, restructuring within departments, coordination of resources between departments, alignment of different departmental priorities and knowledge sharing (Austin et al., 1996). As a result, it can be argued that design is a disruptor of the existing way of creating value (Kretschmer & Khashabi, 2020) and has an impact on the coordination of work activities between different parts of an organization, its strategy and culture (Borja de Mozota, 2002; Jevnaker, 2000).

These effects are likely to be even more pronounced in a digital environment. The greater availability of information allows companies to more accurately assess the relevance of certain tasks, while paving

the way for the introduction of new tasks into the organization. This can be done by introducing new elements in the organizational structure and also by redefining existing organizational functions (Kretschmer & Khashabi, 2020). The challenge for managers is then to find an optimal combination of value-creating resources scattered across different parts of the organization. Again, the digital environment provides a stimulus here by opening up previously unknown opportunities for leveraging resources in ways that increase value and improve user satisfaction and experience. At the same time, it provides management with a more detailed view of performance, leading to lower rates of team error and more efficient task coordination among employees (Kretschmer & Khashabi, 2020). It follows that the possibilities of digital design require new forms of governance and digital innovation management (Henfridsson et al., 2018).

**Hypothesis 2.** Through internal restructuring as a facilitator of cross-departmental collaboration, digital design influences the shift in companies' competitive focus to the customer.

### 2.3 | External sources of design and organizational competitiveness

Among the open questions of design-led innovation, the choice between internal or external design activities is particularly interesting. Many attempts have been made over the decades to determine the factors behind firms' decisions to conduct activities within their own four walls, while delegating others to the market. Transaction cost economics (Williamson, 1975, 1985) suggests that market-based solutions are preferred over intra-firm activities whenever the transactions are not surrounded by special circumstances. While organizational behaviour in the early 20th century was characterized by the dominance of intra-firm activities (Stojcic, 2021), the intensifying competition of more recent times requires companies to rely increasingly on external resources; design is no exception to this trend.

Although the transaction cost approach was mainly concerned with the administrative, production and delivery activities of a firm, its logic can be extended to the innovation process as well, which involves a considerable amount of tacit knowledge while relying on accumulated competencies. The innovation process involves a high degree of uncertainty and the risk of failure, which makes pricing decisions difficult. For these reasons, arm's-length transactions may prove difficult or impossible in the case of innovation (Walsh, 1996). On the other hand, design is characterized by lower uncertainty and a higher degree of specificity than R&D activities, which makes it suitable for outsourcing. At the same time, the lack of indigenous resources may encourage firms to turn to their surrounding business environment for collaborative innovation (Stojcic, 2021). In this sense, prototyping is an important skill for designers within the innovation process (Yu et al., 2018).

Internal design management is considered as one of the strategic organizational capabilities and sources of differentiation, which makes it desirable for companies to choose an internal approach (Fernández-

Mesa et al., 2013). Internal designers master all the requirements of the brand (Hemonnet-Goujot et al., 2019), and Abecassis-Moedas and Rodrigues Pereira (2016) add that internal designers allow a company to optimize time and, most importantly, minimize costs. However, internal designers may be prone to stagnation and creativity blockages due to company policies and culture, which is not the case with external designers (Czarnitzki & Thorwarth, 2012). External designers have been shown to help companies furnish missing in-house design skills, facilitate the transfer and absorption of knowledge about sociocultural contexts, bring fresh ideas to the table and enrich companies with new perspectives regarding the significance of products (Dell'Era & Verganti, 2009).

For these reasons, we argue that design-driven innovation also leads to improved market performance through the reconfiguration of external relationships. The rapidly changing environment reduces the resources relevant for competition and forces firms to collaborate. In such an environment, design-related input and information often come from suppliers and customers (Czarnitzki & Thorwarth, 2012). It can therefore be argued that design-driven innovations open up new perspectives in the relationships between companies and their customers and suppliers. This in turn leads to direct benefits in the form of improved performance (e.g., market share, profits and exports) and indirect benefits manifested in learning about the optimal use of external resources (Walsh, 1996).

Again, the digital environment is an interesting case because digital transformation is changing the nature of interactions between upstream and downstream actors (Kretschmer & Khashabi, 2020). The digital environment makes the boundaries between companies and their environment more permeable, creating space for inter-organizational partnerships, synergistic business models and the delegation of activities to contractors as solutions to increasingly complex challenges (Winby & Mohrman, 2018).

Magistretti et al. (2020) propose a framework in which reliance on external sources in the digital environment acts as a source of dynamic capabilities defined as extending, discussing, tailoring, interpreting and recombining. Within such a framework, value results from digital innovation, which in turn is the result of collaborative efforts to integrate resources through co-creation with suppliers or customers. This process intensifies relationships with external partners to gain a deeper understanding of the opportunities inherent in specific digital technologies, while enabling companies to anticipate future activities.

**Hypothesis 3.** Through restructuring external relationships, digital design influences the shift in companies' competitive focus to the customer.

### 2.4 | The impact of digital design-driven internal restructuring and external collaboration on organizational competitiveness: The mediating role of market orientation

In addition to the channels through which design influences organizational competitiveness, we also hypothesize that there are additional

linkages created by the effects of design-driven internal restructuring and external collaboration on transforming market orientation. Intra-departmental collaboration enables better exploitation of synergies between organizational resources, which can facilitate the path to distinctive and novel products and services (Stojcic et al., 2018), making it easier for firms to enter new markets. Changes in internal processes make organizations more agile and capable of seizing market opportunities (Dabic et al., 2021). At the same time, external resources contribute to the innovation process through the inflow of creativity, ingenuity and imagination (Bruce & Morris, 1994; Czarnitzki & Thorwarth, 2012).

The above arguments are close to proposals in the exporting literature about the gains to be had from participating in the international market, such as skills, knowledge, experience and assets. Orientation on the international market increases organizational familiarity with consumer preferences, networking, business culture and institutions (Bellone et al., 2010; Filatotchev et al., 2001; Roberts & Tybout, 1997). At the same time, it may impede organizations' ability to transform their design efforts into better competitiveness. It follows from there that the success of internal and external restructuring will be mediated by the organization's market orientation.

This suggests that both internal restructuring and redesign of external relationships indirectly contribute to firm competitiveness by affecting firms' abilities to enter new markets. Czarnitzki and Thorwarth (2012) reinforce this view by highlighting the contribution of internal design knowledge to penetrate new markets through its influence on the innovation process. Internal restructuring can support the innovation process by bridging the gap between organizational culture and user desires, removing bottlenecks in intradepartmental collaboration and priorities within the organization and minimizing the risks of information leakage (Abecassis-Moedas & Rodrigues Pereira, 2016).

**Hypothesis 4.** Market orientation mediates the relationship between restructuring internally and shifting organizations' competitive focus to customers.

Several studies have found evidence of synergies between internal and external design sources contributing to the innovation process

in organizations (Belso-Martinez et al., 2011; Fernández-Mesa et al., 2013). Hemonnet-Goujot et al. (2019) draw attention to brand image when considering the use of external designers, who do not have the necessary perceptions of an organization's brand. As such, these designers bring the organization new ideas and alternative views of the problem to be solved. This opens the way for knowledge sharing between internal and external design sources and helps organizations acquire new methodologies, visions and trends that are useful for future activities (Abecassis-Moedas & Rodrigues Pereira, 2016) through channels such as customer-oriented, process-oriented and star external designers (Henseler & Guerreiro, 2020). Over time, such practices can build in-house innovation capabilities, which then become a competitive advantage for the company and enable it to enter new markets.

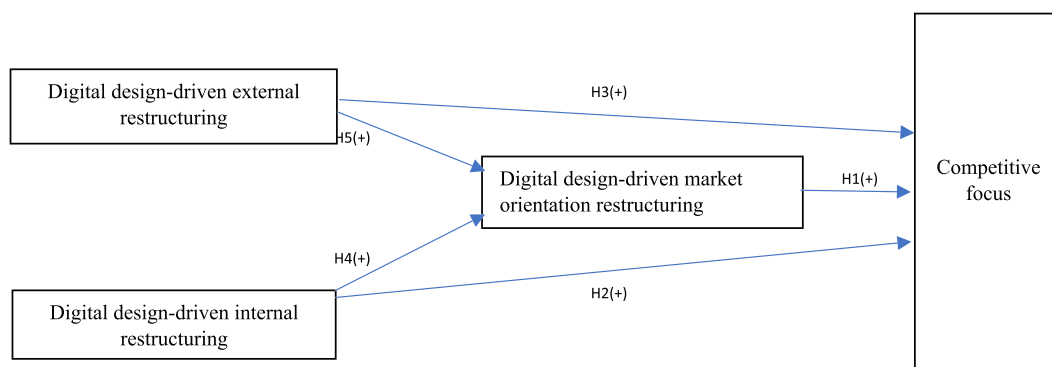
**Hypothesis 5.** Market orientation mediates the relationship between reconfiguring external relations and shifting organizations' competitive focus to customers.

The above hypotheses have been conceptualized in our research model below (Figure 1) of digital design-driven restructuring of organizational processes and shift in competitive focus.

### 3 | DATA AND EMPIRICAL STRATEGY

#### 3.1 | Sample and procedure

The data used in this study come from a survey of French digital designers that was conducted in the second half of 2020 and the first half of 2021 via LinkedIn and Facebook groups. In order to assess the quality of responses, we sent personalized messages and reminders to UI/UX designers. Several designers confirmed that they had responded to the survey. In several instances, designers exchanged with researchers to clarify certain points. The Facebook groups targeted are closed groups dedicated to this profession. Similarly, some of them confirmed and even gave feedback. The profession of interactive/digital design (UI/UX) is a new profession in France. As a result,



**FIGURE 1** Research model of digital design-driven restructuring of organizational processes and shift in competitive focus. Source: Authors. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/eim.12567)]

many professionals actively cooperate to promote their profession. They are very empathetic and caring and use the same methods as management researchers (Chouki et al., 2020).

Designers are considered here as experts: We consider that they have a high level of tacit knowledge about their field. Although we analyse their perceptions about the influence of their work, we believe that this sample is an appropriate and relevant way to understand how design may affect organizations in terms of market orientation, restructuring and cooperation. Participation in the survey was entirely voluntary, and confidentiality was ensured to address any potential privacy concerns (Podsakoff et al., 2003). We sent the survey link to 1200 digital designers via social networks. A total of 515 validated responses were collected, representing a response rate of 42.9%. According to common standards, this can be considered a sufficiently large enough sample for conducting a multivariate SEM analysis and drawing reliable conclusions (Cresnar et al., 2022).

The sample, presented in Table 1, shows that 48.2% of the respondents were male and 51.8% were female. The majority of the respondents (53.4%) were between 20 and 30 years of age, with only 3% of them older than 51 years. Regarding their professional orientation, 48.54% reported being UX/UI designers and 29.13% UX designers. Finally, 54.7% of the respondents worked as in-house designers, with 45.2% being either freelancers or designers at agencies.

### 3.2 | Instrument

The instrument used in the study consisted of two parts. The respondents were first asked questions about demographic characteristics that are present in all studies (Dabic et al., 2021). In the second part, questions were asked about various functions of UX/UI digital design in the organizations with which they were associated. The questions

specifically targeted the impact of digital design on the organization's competitiveness and customer orientation, sales performance and market orientation, changes in internal structure and processes, and the impact on the relationships between the organization and the external environment, including suppliers, competitors and customers. In total, this second part included 21 questions and was adapted from Borja de Mozota's (2002) model of the relationship between organizational design and innovation strategy. All questions were reflexive and rated on a 5-point Likert scale. In addition, the respondents had an option to tick a box if they felt the statements were not relevant to them. This technique minimized response bias because the respondents did not feel pressured to respond to statements that did not make sense to them (Podsakoff et al., 2003).

### 3.3 | Measures

The relevance of UX/UI digital design in organizations was examined using 21 statements reflecting different areas of organizational behaviour and performance resulting from the use of digital design. The respondents rated each statement using a 5-point interval scale with options ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The first group of statements is related to the importance of design in developing competitive advantages, market performance, innovativeness and perceived benefits of products and services to consumers. The second group of statements asked respondents about the impact of design on coordination among organizational departments, business process redesign, technology transfer and new product introduction. Finally, the last group of statements addressed design's contribution to information flow and the relationships with the external environment.

Based on this, a factor structure was constructed that yielded four latent variables reflecting competitive focus realignment, market

**TABLE 1** Demographic analysis results.

Classification		Frequency	%
Gender	Male	248	48.2
	Female	267	51.8
Age	20–30	276	53.4
	31–40	173	33.5
	41–50	52	10.3
	51–60	13	2.6
	61–70	1	0.4
Professional orientation	UX/UI designer	250	48.54
	UI designer	22	4.24
	UX designer	151	29.13
	Others	92	17.86
Type of employment	In-house (enterprise)	282	54.7
	Freelance and agency	233	45.2

Abbreviations: UI, User Interface; UX, User eXperience.

orientation, interdepartmental restructuring and external relations restructuring ( $N =$  number of items):

- Realignment of competitive focus, 'competitive focus' ( $N = 5$ ,  $\alpha = .706$ ), which includes the respondents' opinions about the contribution of digital design to creating competitive advantage by transforming business processes, developing customer focus and increasing the consumer perception of benefits.
- Internal restructuring, 'digital design-driven internal restructuring' ( $N = 3$ ,  $\alpha = .729$ ), which corresponds to statements about the contribution of digital design to cross-departmental functional restructuring through better coordination between marketing, R&D and production functions, and the transition to project-based innovation management.
- Restructuring of external relationships, 'digital design-driven external restructuring' ( $N = 6$ ,  $\alpha = .767$ ), reflecting digital design's contribution to technology transfer, changes in supplier relationships, and collaboration among stakeholders in developing hard-to-innovate products and establishing new market positions.
- Restructuring market orientation, 'digital design-driven restructuring market orientation' ( $N = 2$ ,  $\alpha = .786$ ), which reflects the contribution of digital design to increasing sales through the development of exports.

It is evident from the above that our modelling approach does not create an individual construct of digital design. Rather, it aims to assess links between the different channels through which digital design influences organizational behaviour. In line with our theoretical hypotheses, we argue that placing greater focus on digital design induces changes in organizational internal procedures, relationships with the external environment and the orientation between domestic and international markets. By facilitating these processes, our model argues, digital design realigns the organizational competitive focus by making it more consumer-oriented. For a detailed list of the questions underlying our constructs, see Table A2.

Details of the composite reliability (CR), average variance extracted (AVE) and Cronbach's alpha coefficients for the constructs are shown in Table 2 and were obtained from the standardized path loadings of the items behind the mediator model, each of which significantly explains the corresponding latent construct. It can be inferred that the reliability of the latent constructs is acceptable based on AVE values above .5, CR values above .7 (Fornell & Larcker, 1981) and Cronbach's alpha value above .7 (Hair et al., 2006). In addition, the factor loadings underlying the latent constructs were above conventional cut-off values (Dabic et al., 2021), which allowed us to proceed

**TABLE 2** Discriminant validity and reliability.

Construct	External restructuring	Internal restructuring	Market orientation	Competitive focus
Cronbach's alpha	.767	.786	.729	.706
AVE	.504	.562	.513	.541
CR	.801	.791	.774	.611

Abbreviations: AVE, average variance extracted; CR, composite reliability.

with the study. The details of the concepts and scales can be found in Appendix A. Analyses were conducted with a structural equation model using SPSS Amos software.

### 3.4 | Research design and analyses

The analysis was performed in two steps. In the first step, the direct relationship between external restructuring, market restructuring and internal restructuring on the one hand and competitive focus differentiation on the other were investigated using SEM and confirmatory factor analysis. SEM permits simultaneous estimation of multiple relationships, such as those present in our model among observed and latent variables (factor analysis model), accompanied by the fit indices of the measurement model and hypothesized model.

In the second step, a mediator model was constructed in SEM (Baron & Kenny, 1986), in which it was shown that market orientation restructuring mediates the relationship between internal and external restructuring on the one hand and competitive focus differentiation on the other.

The analysis was conducted on two samples of designers: those working in companies (internal) and freelance and agency-based designers (external). Table 3 shows the common goodness-of-fit indices of the mediator model for both samples. These indicated a reasonable fit and allowed us to proceed with the interpretation of the results.

In a further investigative step, we also examined the possibility of a common method bias, given that a single instrument was used to

**TABLE 3** Fit statistics.

Statistics	Internal designers sample	External designers sample
CFI	.869	.858
IFI	.874	.861
$\chi^2$	572.283*** ( $N = 282$ , $df = 99$ )	265.172*** ( $N = 233$ , $df = 99$ )
RMSEA	.090	.086
RMR	.186	.167
Observations	282	233

Abbreviations: CFI, comparative fit index; IFI, incremental fit index; RMR, root mean square residual; RMSEA, root mean square error of approximation.

\*Statistical significance at 10%.

\*\*Statistical significance at 5%.

\*\*\*Statistical significance at 1%.

Source: Authors.



measure the dependent and independent variables (Podsakoff et al., 2012). An examination of multicollinearity revealed variance inflation factor (VIF) values between 1.23 and 2.24, indicating no evidence of multicollinearity. We also tested for common method variance using exploratory factor analysis without rotation (Cresnar et al., 2022; Podsakoff et al., 2012). By loading all 21 items onto a single factor, we obtained a common latent factor explaining 32.78% of the variance, a value below the 50% threshold (Lindell & Whitney, 2001).

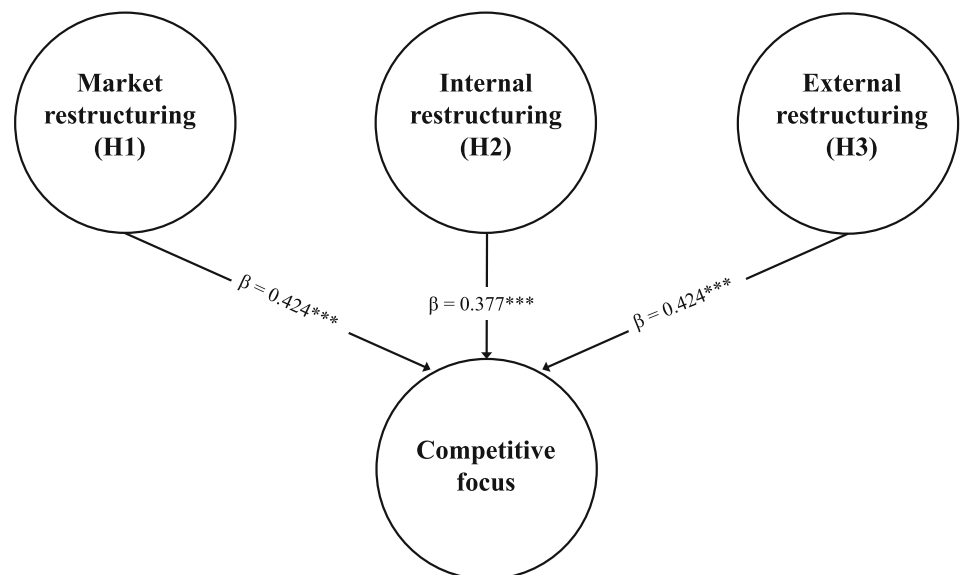
## 4 | RESULTS

### 4.1 | The direct effect of digital design-driven restructuring on competitive focus differentiation

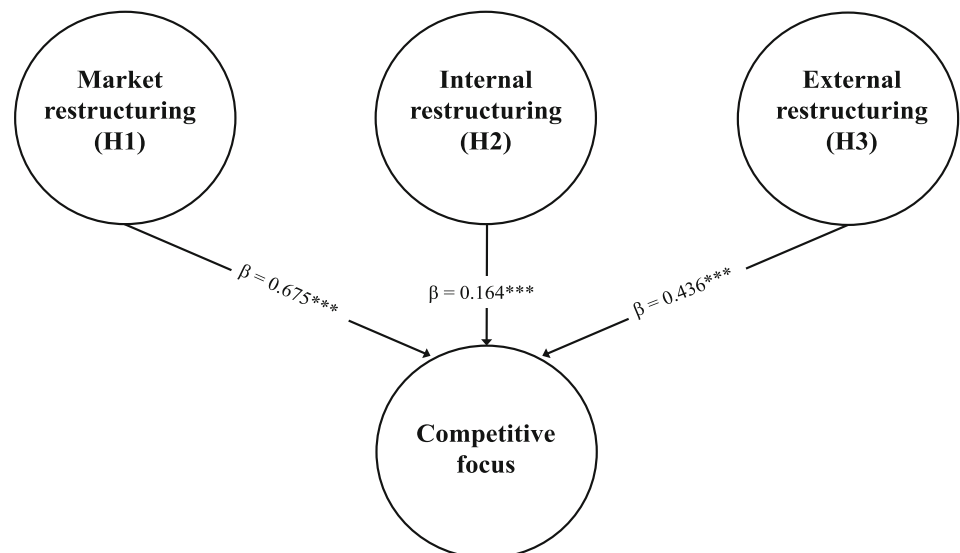
The results of the analysis of the direct effects of digital design-induced restructuring (internal, external and market) on competitive

focus differentiation are presented in Figures 2 and 3 and Tables 4 and 5. In both subsamples, internal and external designers (agency-based and freelance), a positive and statistically significant direct relationship can be observed between internal and external restructuring and competitive focus differentiation, as well as between market orientation restructuring on the one hand, a variable that could play a mediating role in the relationship between internal and external restructuring, and competitive focus differentiation on the other. Hypotheses 1–3 are confirmed. Regarding market orientation restructuring and the two subsamples (Hypothesis 1), we observed significantly larger effects in the sample of external designers (.675 vs. .424).

This can be taken as an indication that external ideas and knowledge are perceived to contribute comparatively more to firms' restructuring efforts. Comparing the values between internal and external designers concerning Hypothesis 2 (internal restructuring → competitive focus) and Hypothesis 3 (external



**FIGURE 2** Direct effects of design-induced restructuring on competitive focus differentiation for in-house designers.



**FIGURE 3** Direct effects of design-induced restructuring on competitive focus differentiation for external designers.

Hypothesis	Direct effect	Coefficient	Outcome
Hypothesis 1	Market restructuring → competitive focus	.424*** (.112)	Hypothesis confirmed
Hypothesis 2	Internal restructuring → competitive focus	.377*** (.080)	Hypothesis confirmed
Hypothesis 3	External restructuring → competitive focus	.269*** (.073)	Hypothesis confirmed

\*Statistical significance at 10%.

\*\*Statistical significance at 5%.

\*\*\*Statistical significance at 1%.

Hypothesis	Direct effect	Coefficient	Outcome
Hypothesis 1	Market restructuring → competitive focus	.675*** (.145)	Hypothesis confirmed
Hypothesis 2	Internal restructuring → competitive focus	.164*** (.065)	Hypothesis confirmed
Hypothesis 3	External restructuring → competitive focus	.436*** (.103)	Hypothesis confirmed

\*Statistical significance at 10%.

\*\*Statistical significance at 5%.

\*\*\*Statistical significance at 1%.

restructuring → competitive focus) brings a new insight about the relationship between internal and external designers. Each group seems to consider that it has more impact via its own area (.377 > .164 and .269 < .436). This reinforces the idea that cooperation is needed between in-house and external designers because their skills and inputs are different and complementary.

Among the individual factors in both samples, we observed the strongest effects resulting from market orientation restructuring. These results can be taken as evidence that the contribution of design to the ability of firms to penetrate new international markets and increase their sales by participating in these markets (the underlying dimensions of our construct of market restructuring) acts as the strongest motivator for investing effort in competitive focus differentiation. Moreover, market restructuring explains a larger portion of the variance than the other two constructs. Following Baron and Kenny (1986) and Cresnar et al. (2022), this can be taken as a signal of possible mediation.

## 4.2 | Mediation analysis

We next turn to mediation analysis. Table 6 contains the results of the estimation of the relationship for both subsamples between internal and external restructuring on the one hand and market restructuring on the other. From these results, it is clearly apparent that both internal and external restructuring positively and statistically significantly influence market restructuring, as argued in earlier sections of our paper.

**TABLE 4** Direct and indirect effects for in-house designers.

**TABLE 5** Direct and indirect effects for external designers.

**TABLE 6** Effects of internal and external restructuring on market restructuring.

Effect	In-house designers Coefficient	External designers Coefficient
Internal restructuring → market restructuring	.243*** (.036)	.202*** (.001)
External restructuring → market restructuring	.076*** (.028)	.275*** (.041)

\*Statistical significance at 10%.

\*\*Statistical significance at 5%.

\*\*\*Statistical significance at 1%.

We relied on Hayes's PROCESS software to examine the presence of mediating effects and additionally employed a bootstrapping approach (Preacher & Hayes, 2008) with 50,000 bootstrap samples (Hayes, 2013; Preacher & Hayes, 2004) to explore the indirect effects of internal and external restructuring on competitive focus. Table 7 and Appendix A1 and A2 reveals the results of this analysis.

We find evidence of partial mediation in both samples. Internal and external restructuring retain their signs and significance, although the magnitude of coefficients is reduced. As a result, we find full support for Hypotheses 4 and 5. These findings suggest that the market restructuring effects of digital design induce changes in internal procedures that affect existing employees. At the same time, they require that both employees and external partners make modifications relevant for technology transfer, supplier–buyer relationships and collaborative innovation practices.

**TABLE 7** Direct and indirect relationships with market restructuring as mediator variable.

Sample	Hypothesis	Relationship	Standardized direct effect	Standardized indirect effect	Mediation
In-house	Hypothesis 4	Internal restructuring → competitive focus	.523*** (.024)	.052*** (.018)	Partial
External			.046** (.002)	.058** (.012)	Partial
In-house	Hypothesis 5	External restructuring → competitive focus	.026*** (.013)	.047** (.018)	Partial
External			.236*** (.024)	.076** (.031)	Partial

\*Statistical significance at 10%.

\*\*Statistical significance at 5%.

\*\*\*Statistical significance at 1%.

## 5 | DISCUSSION

A quantitative analysis of internal and external digital designers in an advanced European economy allowed us to assess how the adoption of digital design practices influences different dimensions of organizational restructuring, ultimately leading to a change in competitive focus towards a greater concentration on the customer and a stronger perception of the benefits consumers receive from consuming goods or services. In line with the work of Ballot et al. (2015), this research highlighted the role of internal and external design in organizational success. This work has shown the complementary contributions that external design can make to an organization's internal innovation, in addition to the contribution of improving companies' products. Unlike classic designers (products, space, packaging, etc.), the digital designers examined in this study use sophisticated technological tools that allow for better socialization of external knowledge. Our findings are also close to those of Perks et al. (2005), arguing that both internal and external designs actively contribute across organizational activities in the process of new product development.

Our findings, based on the work of Porter (1985) and Borja de Mozota (2002), show that digital design facilitates organizational restructuring and thus helps organizations create value (Chouki et al., 2020; Chouki et al., 2021). These findings corroborate assertions from the previous literature (Cresnar et al., 2022) about the importance of the organizational ecosystem, including internal operations, market orientation and external relationships, including how they relate to the ability of organizations to compete and survive in a competitive environment.

Our analysis views digital design as a central factor in the organizational ecosystem, driving change by placing greater strategic interest on the user. In this sense, our results are consistent with those of earlier periods that focused on classic design (Peters, 1989) and also to that of more recent literature (Dell'Era et al., 2020; Henseler & Guerreiro, 2020). The results suggest that the diversity of solutions proposed by digital designers (both UI and UX) stimulates organizational restructuring in several dimensions, reminiscent of the work of Auernhammer (2020). The coordinating role of the designer becomes particularly relevant in the context of innovation management as it

promotes knowledge sharing, project management, collaboration and market innovation, supporting the work of Austin et al. (1996) and Chouki et al. (2020). As our results show, design-induced restructuring efforts help firms increase customer satisfaction as a prerequisite for higher value creation (Gemser et al., 2011).

Our results show the breadth of changes that can be triggered by digital transformation in companies. This means that digital transformation goes beyond the mere application of digital technologies. Rather, it sets in motion an entire range of restructuring measures that serve the common goal of making it easier for a company to differentiate itself from its competitors, increase customer satisfaction and, in this way, achieve a higher return on investment. In line with the work of Calabretta and Kleinsmann (2017), this research proves and consolidates the idea that digital design (on UI and UX) focuses mainly on research around the user. This is justified by the strong relationship between user-oriented research and innovation and the acquisition of a competitive advantage.

### 5.1 | Theoretical implications

Our study highlights the interconnectedness of processes that occur within organizations and in their interactions with the surrounding business environment, and positions digital design as an enabler that stimulates change across a range of organizational activities, echoing the work of Verganti (2009) and Verganti and Dell'Era (2014). Design has been shown to facilitate cross-departmental coordination and to trigger a shift in organizational approaches by placing a greater focus on project-based management. In addition, the increased emphasis on digital design requires companies to change their external relationships to create new market positions. However, all of these are exacerbated by shifts in market orientation. Our results suggest that organizational shifts towards digital design led to restructuring, while the market incentives mediated by new market signals give these activities the extra push needed to shift the competitive focus.

Our theoretical framework was established by bridging propositions from several theoretical approaches. To this end, the theoretical implications of our work cannot be limited to a single theoretical area.

Our findings help to explain how placing greater emphasis on design enables organizations to shift their competitive focus towards greater emphasis on consumers. This adds to the consumer perspective in design research by showing that digital design creates competitive advantage by improving user satisfaction and perceived consumer benefits. We also reveal two distinctive mechanisms of digital design influence on organizational competitiveness. The result of this research attempts to enrich the work of Artusi and Bellini (2020) and Magistretti et al. (2022) for whom design creates value by focusing on user needs. This clearly contributes to improving innovation within the organization. Our findings show that internal design facilitates changes in organizational routines in line with the evolutionary economics and dynamic capabilities literatures, but that at the same time, external design sources help organizations to reduce research costs and catch up with novel trends, as expected on the basis of a transaction costs approach. This perfectly supports the view of Magistretti et al. (2021) that design contributes to problem solving by taking account of both technical and, above all, financial constraints. On this basis, it is evident that organizations use design to induce both internal and external changes, a process that cannot be explained through the lens of a single theory. Rather, our findings make it clear that the theory of digital design's influence on organizational competitiveness must take into account arguments from different approaches to organizational behaviour. This corroborates the work of Calabretta and Kleinsmann (2017), for whom digital design plays a part in reducing the complexity encountered in an innovation process.

Our findings suggest that external designers help firms find new markets, while in-house designers have a better view of internal processes relevant to fostering creativity, ideation and innovation. This is consistent with Artusi and Bellini's (2020) argument that design helps to align the different organizational units involved in product development in a way that delivers desired meaning to customers by continuously exploring, stimulating, challenging and disrupting internal organizational processes, restructuring business activities and ensuring the embedding of new and improved competencies and knowledge into organizational strategy. Consistent with the work by Czarnitzki and Thorwarth (2012), our results highlight the contribution of internal designers to organizational restructuring through an optimization of internal processes and better use of internal organizational resources in the innovation process. These results also support Abecassis-Moedas and Rodrigues Pereira's (2016) contention that internal design improves the competitive climate and develops strategic advantages.

Our findings also challenge the common claim that freelance and agency designers, in their quest to serve as large a portion of the market as possible, tend to use a one-size-fits-all approach, limiting their own creative investment to individual clients. Rather, they seem to indicate that reliance on external designers helps firms to reduce the costs of researching novel market trends in the digital environment. To this end, our findings are in line with the framework of Magistretti et al. (2020) in which external collaboration and co-creation allow organizations to gain a deeper understanding of the opportunities inherent in specific technologies and markets and to better anticipate

future activities through the delegation of activities to contractors as solutions to increasingly complex challenges (Winby & Mohrman, 2018). Overall, these results suggest that, to build a firm's competitiveness, the different potential contributions of internal and external designers should not be overlooked when considering a strategy to reposition the competitive focus. This finding reinforces the idea put forward by several studies (Belso-Martinez et al., 2011; Fernández-Mesa et al., 2013) that the synergy between internal and external design sources optimizes innovation within organizations.

## 5.2 | Practical implications

Our study suggests that companies should recognize the potential of digital design as an enabler of broader organizational change. They also suggest that digital transformation does not lead to change per se but rather requires changes across the entire organizational ecosystem (Cresnar et al., 2022). The study confirms the work of Micheli et al. (2012) and Luchs et al. (2016), for whom interactive and digital design creates differentiation in market relationships, thanks to the aesthetics of UI design and, in particular, thanks to the usability and ergonomics that UX design represents. In the market, aesthetics and functionality appear to play an important role in differentiating market relations (Luchs et al., 2016). In this sense, the results show that achieving market relationship differentiation is important for digital and interactive design. By conducting a solid prior usability study through UX design and by facilitating functionality, the expertise of the UX/UI designer contributes to the loyalty of customers and brand users, as shown by Kumar et al. (2015).

In line with Gemser et al. (2011), our results show that digital design improves sales performance through the internationalization channel. Better use of internal resources and the opening of new channels for knowledge transfer appear to endow firms with strategic advantages that become critical success factors in the unfamiliar environment of novel markets (Micheli et al., 2018). In this way, design becomes a source of strategic advantage (Gardien & Gilsing, 2013), enabling firms to more easily and successfully overcome the sunk costs of exporting. Moreover, the findings on restructuring market orientation suggest that managers should be aware of the need to develop strategies, identify the needs of new markets and initiate restructuring actions towards greater customer orientation. In contrast to the work of Wolff and Amaral (2016), our results show that innovation and the market are the most important restructuring dimensions influenced by design.

## 5.3 | Limitations

Our study is situated in the specific context of an advanced European economy and based on the perceptions of in-house and external designers. This may affect the generalizability of our findings. We were also unable to assess the differences in the relevance of individual digital design dimensions (e.g., UI, UX and UI/UX). In addition, our

analysis did not take into consideration the size of the organizations in which the respondents were involved nor sectoral heterogeneity. These issues require wider sampling procedures and remain challenges for future research.

## 5.4 | Future research directions

Although our results reveal some interesting facts about the role of digital design in organizations, the assessment of this phenomenon that they provide is far from comprehensive. Future studies should attempt to assess the findings in a cross-country context that includes both advanced and emerging economies, as well as sectors with different levels of digital intensity. In addition, future studies should assess the contribution of digital design to competitive outcomes other than used in this study, as well as across organizations of different sizes.

## 6 | CONCLUSIONS

Our study has highlighted the role of digital design in organizational restructuring and in shifting the competitive focus, thus contributing to the field of design management. It builds on the work done more than two decades ago by Borja de Mozota (2002), exploring whether designers' contributions to organizational life differ in the digital age. Several theoretical contributions are proposed as a result of this study. First, for both management science and design science, it emphasizes the considerable shift in competitive focus as a result of digital design in organizations. It thus quantifies the relationships between the different aspects of organizational behaviour that precede such a shift. A second theoretical contribution lies in the identification of market and innovation restructuring as major areas to which design contributes through the restructuring of internal and external processes and market orientation. A third important theoretical contribution lies in the different perception of external designers (freelancers and agencies) on the one hand and digital designers in companies on the other.

At the management level, we recommend that freelance and agency digital designers emphasize their brand and market knowledge when negotiating their contractual relationships with client companies. We make managers aware of the importance of employing digital designers in their companies and the importance of encouraging competition between these in-house designers and externally contracted designers. This will improve idea generation and innovation. We also raise awareness of the coordinating role played by digital design in innovation management. In conclusion, we recommend that managers recognize the importance of innovation and market dimensions in triggering economic performance that leads to a strategic shift in competitive focus.

### DATA AVAILABILITY STATEMENT

The data supporting this study's findings are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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## APPENDIX A

**TABLE A1** Constructs and items cross-loadings.

Variables	External restructuring	Internal restructuring	Market orientation	Competitive focus differentiation
V11	.691	.343	.274	.202
V12	.504	.228	.233	.221
V16	.631	.246	.245	.086
V19	.697	-.11	.058	-.055
V20	.668	.249	.109	.149
V21	.604	.27	-.108	.278
V8	.1	.821	.171	.169
V14	.137	.814	.219	.083
V15	.445	.592	.129	.121
V1	.01	.128	.312	.584
V2	.062	.099	.085	.743
V3	.044	.01	.074	.776
V9	.32	.389	-.053	.53
V10	.352	.251	-.016	.539
V5	.23	.088	.613	.158
V7	-.077	.195	.712	.093

**TABLE A2** List of items in instrument.

Item no.	Statement
V1	Digital design creates a competitive advantage.
V2	Digital design is a core competency.
V3	Digital design contributes significantly to benefits perceived by consumers.
V4	Digital design changes the spirit of the firm, which becomes more innovative.
V5	Digital design develops exports.
V6	Digital design increases market share.
V7	Digital design allows a company to sell at a higher price.
V8	Digital design improves coordination between marketing and R&D functions.
V9	Digital design is a know-how that transforms the activity processes.
V10	Digital design develops care for customer in the innovation policy.
V11	Digital design generates technology transfers.
V12	Digital design gives access to a wide variety of markets.
V13	Digital design accelerates the launch of new products.
V14	Digital design improves coordination between production and marketing.
V15	Digital design develops project management of innovation.
V16	Digital design creates a new market.
V17	Digital design improves the circulation of information in innovation.
V18	Digital design means higher margin or costs reduction.
V19	Digital design is difficult to imitate by competitors.
V20	Digital design changes relationships with suppliers.
V21	Digital design improves cooperation among agents.

Abbreviation: R&D, research and development.