Technological Forecasting & Social Change 187 (2023) 122256

Contents lists available at ScienceDirect

Technological Forecasting & Social Change

journal homepage: www.elsevier.com/locate/techfore

Sports entrepreneurship during COVID-19: Technology as an ally to maintain the competitiveness of small businesses

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ARTICLE INFO

Keywords:
Sports entrepreneurship
SME
Technology
Strategic orientation
Business model adaptation

ABSTRACT

The sports sector, specifically the field of personal trainer entrepreneurship, has been severely affected by the COVID-19 crisis. However, there are still few empirical studies that analyze how the actions taken before and during this crisis can affect sports entrepreneurs' performance. This research aims to analyze which combinations of sports entrepreneurs' personal characteristics and actions performed have been most and least effective in minimizing the negative impact of COVID-19 on their businesses. A validated online questionnaire was administered to personal trainer entrepreneurs from May to June 2020 before they reopened their facilities. Fuzzy-set qualitative comparative analysis (fsQCA) was performed to assess the impacts. The results show that both post-COVID measures (adaptation of the business model) and previous strategic orientation seemed essential. Specifically, high levels of sports entrepreneurs' resilience and innovation/R&D when competing against their closest competitors before the COVID-19 pandemic and the increased use of technologies (sports services digitization) during the pandemic have been essential to maintaining the performance of the sports business. Thus, improvements in the digital competencies of personal trainers' sports entrepreneurs, the development of strategic plans and activities related to innovation/R&D and process improvements are important measures to maintain the competitiveness of small sports businesses during crises.

1. Introduction

Entrepreneurship has been considered an essential and novel force for the competitiveness of sports industries and their socioeconomic positioning in society (Jones et al., 2017). Indeed, sports are considered entrepreneurial by nature, and if their competitiveness is to be maintained, entrepreneurship is vital when managing businesses (Ratten, 2012). The initial theory, proposed by Ratten (2011), is based on the idea that the sports sector involves more innovation and risk-taking activities than do other sectors due to the emphasis on competitiveness (Pellegrini et al., 2020). However, even though the sports industry represents one of the most entrepreneurial economic sectors in the global economy, the coronavirus pandemic (COVID-19) has hindered its ability to remain competitive (Parnell et al., 2020). Due to the massive spread of the new coronavirus (SARS-CoV-2), many European governments have enacted regulations and legislation to reduce social interactions and contain its spread (Mutz and Gerke, 2020). Restrictive measures were taken in terms of social distance, capacity maintenance, and—in some cases—closure of these sports businesses, as they were considered nonessential activities. Due to those restrictive measures, the fitness industry has lost a total of €1.505 billion during the pandemic (Valgo, 2021).

Thus, sports businesses that are slow or unwilling to react to a crisis are likely to exhibit lower performance levels (Ratten, 2020a). Therefore, due to the COVID-19 crisis, the importance of sports entrepreneurship has increased because of its deep connection to change (Ratten, 2020b). Sports entrepreneurship is especially important during COVID-19, as all sports companies, athletes, managers, fans, and consumers

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https://doi.org/10.1016/j.techfore.2022.122256
Received 27 December 2021; Received in revised form 27 August 2022; Accepted 4 December 2022

must make use of it to act creatively in the face of unexpected events. According to the same author, doing so will help combat the discomfort and uncertainty associated with the COVID-19 crisis. During times of crisis, the sports industry must use its unique business ecosystem to foster proactive collaboration that leads to value cocreation (Ratten et al., 2021).

In the specific case of the sports industry, there are some businesses that play a key role during the COVID-19 crisis. Such a key role is filled by entrepreneurs of personal training centers, as they play a vital role in promoting physical activity in the population. Physical sports practices contribute to improving people's health and immunity. Moreover, these practices bring enormous benefits to cognitive functioning and well-being (Mandolesi et al., 2018). During the COVID-19 pandemic, people with both normal health and chronic disease activate, maintain, and advance their physical activity for 30 to 60 min on most days of the week within the limits of social distancing (Denay et al., 2020). Recent studies show that continued sports practice increases survival in relation to COVID-19 (Salgado-Aranda et al., 2021). Therefore, entrepreneurs of personal training centers in the sports industry face the challenge of continuing to offer their services. Hence, it is vital to discover which strategies are the most effective to diminish the adverse effects of the COVID-19 crisis on the performance of these centers.

According to crisis management literature, innovation, and creativity, as well as the resilience of entrepreneurs, are often key to overcoming crises. Creative people are those who exhibit creative behaviors, such as inventing, designing, devising, composing and planning activities (Guilford, 1950). Innovation is defined as the creation of new processes, products or services for the market, which improve the overall competitiveness in the market (Li and Atuahene-Gima, 2001). Therefore, creative people are more likely to develop innovative behaviors. Resilience is defined as the ability to maintain reliable functioning despite adversity (Williams et al., 2017). According to these authors, linking crises and resilience can provide a more complete understanding of the organization.

All these individual capabilities can help entrepreneurs manage their businesses more efficiently in general and mainly during times of crisis. In terms of management aspects, the strategic orientation of entrepreneurs when managing their businesses—in this case, during and prior to crisis management—can be considered a critical element of the innovation process (Adams et al., 2019). Strategic orientation refers to "principles that direct and influence the activities of a firm and generate the behaviors intended to ensure its viability and performance" (Hakala, 2011, p. 199). In this case, the creativity, innovation and resilience of entrepreneurs can help improve their strategic orientation.

Moreover, during times of crisis, business adaptation is often key, with technology sometimes being a key ally. Indeed, Trischler and Li-Ying (2022) note that in times of unprecedented change related to the ongoing digital transformation of businesses and society at large, a contemporary management challenge is to recognize and translate these changes into digital business model innovation. Digitization affects almost all industries, creating opportunities and challenges for established companies, large, digital, nascent and small start-ups (Volberda et al., 2021), with the sports industry being no exception. As COVID-19 continues to affect everyone's lives and consumer behaviors, the digital transformation process has experienced unprecedented growth that may not abate—even after the pandemic has passed (Kim, 2020). COVID-19 has challenged many companies to turn toward digital solutions for their survival (Modgil et al., 2022). During 2020 and 2021, there was an increase in technological change and a push for digital entrepreneurship in many parts of the world to address different challenges (Iivari et al., 2020; Secundo et al., 2021). During the last two decades, the phenomenon of digital entrepreneurship fueled by COVID-19 has been driven by technological assets ranging from internet tools to communication and information technologies (Abubakre et al., 2021; Bai et al., 2021). Furthermore, although the long-term effects of the COVID-19 crisis for small businesses are still unknown, in the short term, it is becoming increasingly clear that more digital capabilities are needed to survive (Ratten and Thompson, 2021).

Therefore, making use of creativity and innovation and the resilience of sports entrepreneurs is key during COVID-19, with technology being their ally. Specifically, technological innovation is a complex and multidimensional construct that refers to innovations associated with an organization's operations, such as the introduction of new/improved products or processes (Singhal et al., 2020). These authors point out that scholars demonstrate the importance of technological innovation in a firm's ability to gain a sustainable competitive advantage.

However, although interest in sports entrepreneurship has been growing in recent years (González-Serrano et al., 2020), studies have not yet incorporated a crisis management approach (Ratten, 2020b) focusing on the creativity, innovation and resilience capabilities of sports entrepreneurs. Neither have they focused on digital and business model transformation and strategic orientation aspects due to the COVID-19 crisis. Some studies address the crisis management approach theoretically (DiFiori et al., 2020; Ratten, 2020b; Weed, 2020); however, empirical studies using this approach are practically nonexistent (Escamilla-Fajardo et al., 2020; Hammerschmidt et al., 2021). Furthermore, no empirical study addresses this approach from the perspective of the for-profit sector and, more specifically, personal training centers, whose role is key to the maintenance and improvement of society's health and survival in the face of this virus. This investigation is also important because these companies are usually small in size (Jones et al., 2017). Previous studies already highlight their concern over the effect of COVID-19 on small companies (Thorgren and Williams, 2020). Therefore, this study aims to determine which combination of internal characteristics of sports entrepreneurs (creativity and innovation, and resilience) and strategies (strategic orientation and business model adaptation) that they adopted (both previous strategies and strategies during the crisis) have been more effective and less effective for their businesses' performance during times of crisis. For this purpose, the fsQCA methodology is used because the complexity of entrepreneurial phenomena exceeds traditional methods' capability to reflect important aspects of their heterogeneity (Douglas et al., 2020).

This paper contributes to the literature in different ways. First, it focuses on crisis management in the sports sector—studies on which are practically nonexistent. There is a need to deepen knowledge in this area of crisis management in the sports sector (Ratten, 2020a). Second, a dual approach was used in this study. Hence, this study contributes to addressing the fact that most studies focus only on analyzing the post-crisis measures taken by companies without considering the precrisis measures taken (Doern, 2016). Thus, in this study, the actions taken by sports entrepreneurs both before (strategic orientation) and during (business model adaptation) the COVID-19 crisis are analyzed to discover their impact on business performance. The findings highlight that not only corrective measures (during the crisis) but also preventive measures (such as previous strategic orientation and innovation and creativity) could diminish the harmful effects of crises on small and medium-sized enterprises (SMEs) in the sports business. Third, this research presents specific measures that could diminish the harmful effects of crises. Regarding personal characteristics, the resilience capability of sports entrepreneurs is of vital importance in diminishing the harmful effects of COVID-19. Regarding previous measures taken before a crisis, the introduction of innovation/R&D when competing against the closest competitors and for continuous process improvement are essential. Moreover, during a crisis, business model adaptation measures mainly based on the introduction of new technology and the intensification of existing partnerships, the search for new suppliers and the reorganization of operational processes are essential to diminish the negative effects of the crisis. However, it is not the measures taken in isolation but the combination of these measures with the personal characteristics of sports entrepreneurs that can reduce the negative effects of crises. In this way, this study deepens the knowledge of crisis management in small companies in the sports sector, proposing

operating guidelines that can help reduce future crises' negative impacts on these companies.

2. Theoretical framework

2.1. COVID-19 and its impact on the sports industry in Spain

The COVID-19 pandemic originated in December 2019 in China (specifically, the city of Wuhan was the epicenter) and spread rapidly to all parts of the world (Parnell et al., 2020). Since then, the first outbreaks in Spain, Italy, France, Germany, and the United Kingdom led the WHO Director-General to declare on March 13, 2020, that Europe had become the epicenter of the virus (Weed, 2020). Subsequently, the spread COVID-19 throughout the Americas meant that people worldwide were confronted with a virus for which there was neither a vaccine nor a treatment, and blocking measures had to be implemented to cope with a global pandemic. The World Health Organization (WHO, 2019) declared a pandemic of a global scope and stated that no continent is exempt (WHO, 2019). As of June 13, 2021, this pandemic caused approximately 3,816,651 deaths worldwide (Worldometer, 2021).

With specific regard to Spain, on March 15, Royal Decree 463/2020, issued on March 14, declared a state of alarm for the management of the health crisis caused by COVID-19 (p. 25390–25,400) and decreed the confinement of this country. This decree led to a nearly complete paralysis of the fitness and sports facilities sector. This sector is among those suffering the most from the effects of this health crisis and the consequences of the measures implemented by competent authorities to help alleviate it (Valgo, 2020).

Between April 2020 and March 2021, each sports center suffered on average a 64 % reduction in turnover because of closures and restrictions of facilities, resulting in a loss of €1.505 billion during the pandemic (Valgo, 2021). This situation is worrisome, since the COVID-19 crisis is an unprecedented situation that remains ongoing, and it is unknown when it will end (He and Harris, 2020). Moreover, unlike other crises, the COVID-19 pandemic has dramatically changed society and has altered current business practices (Ratten, 2020a). These changes have been reflected in the economy and people's behavior because it is a highly contagious virus, so social distancing, hygiene, and the use of masks, among other measures, are crucial. This fact has meant that fitness centers have had to adapt and reconsider the services they offer.

2.2. Crisis management and entrepreneurship

A crisis refers to an event that is considered relatively unpredictable, threatens important stakeholder expectations, and can significantly negatively impact an organization's performance (Coombs, 2014). The literature on crisis management focuses on the "association between planning and the enhancement of preventative actions and/or responses to organizational failures, accidents, and disruptions" (Herbane, 2013). However, most research on crisis management focuses on natural disasters or financial events (Grewal and Tansuhaj, 2001; McEntire et al., 2002; Ratten, 2020c), so the business literature discusses crisis management from an economic rather than behavioral perspective. Specifically, the coronavirus crisis has affected companies' abilities to carry out their activities, introducing changes in behaviors such as working from home and social distancing (Ratten, 2020a). This same author points out that this combination has posed challenges to many companies' survival, particularly those in the service economy. Therefore, improvisation and acceptance of digital technology have been two of the behaviors promoted by this pandemic (Sheth, 2020).

Moreover, the repercussions of a crisis on small businesses can be particularly remarkable due to their lack of preparation and resources, which make them more vulnerable (Runyan, 2006). In general, smaller organizations tend to suffer above-average during crises due to a lack of resources, limited experience, and less formalized crisis management planning (Doern, 2016). While COVID-19 is affecting nearly every person and organization in the world, there is particular concern over how the consequences of the pandemic and the various government responses to it (lockouts, social distancing guidelines, etc.) will affect small and medium-sized enterprises (SMEs) (Thorgren and Williams, 2020). However, there is very little research on how crises affect how small firms are managed (Galbraith and Stiles, 2006; Herbane, 2013). This research gap is striking because small firms are more likely to be affected by crises and have to struggle more to recover from them (Asgary et al., 2012).

Typically, the most effective measures to resolve crises are analyzed during a crisis and exhibit their effects after the crisis is resolved. Most research in this area focuses on the postcrisis period and identifies obstacles to recovery (Doern, 2016). Moreover, studies that attempt to uncover characteristics that predict firms' successful recovery after crises are inconsistent in identifying the key factors responsible for recovery (Corey and Deitch, 2011). According to Dobrowolski (2020), it is necessary to test actions' effectiveness before they occur. For this reason, there have been several calls for organizational research to better explore what we know about crisis-organization interactions, including how to develop organizational resilience not only as a critical response to adversity but also how to mitigate it before it arises (Van Der Vegt et al., 2015; Williams and Shepherd, 2016). However, the most effective measures on how firms should act in the face of a crisis do not seem to be precise (Johansen et al., 2012). The literature highlights that the nature of a crisis and its responses are multifaceted (Dobrowolski, 2020).

2.2.1. Resilience

Although each discipline offers a different definition and perspective of resilience, the common aspect among these definitions is that resilience responds to unexpected or unanticipated changes and disturbances and an ability to adapt and respond to those changes (Erol et al., 2010). Gallopín (2006) discusses enterprise resilience as an enterprise's adaptive capacity and ability to cope with, adapt to, and recover after a disruption. In the literature, flexibility has become an emerging construct of resilience (Stevenson and Spring, 2007). Resilience suggests that a system's adaptive capacity in the case of a disruption can be increased by designing, planning, and building flexibility in systems (Sheffi and Rice, 2005; Walker et al., 2004).

An enterprise with high resilience is most likely to cope with problems that arise every day and successfully manage all aspects that cause the crisis (Sanchis Gisbert and Poler Escoto, 2013). Sheffi and Rice (2005) state that building resilience should be a strategic initiative that changes the way an enterprise increases its competitiveness. Enterprises need to be as resilient as possible to face disruptions (Sanchis Gisbert and Poler Escoto, 2013). Barroso et al. (2008) define a disruption or its synonymous disruptive event as a foreseeable or unforeseeable event, directly affecting an enterprise's usual operation and stability.

Resilience helps businesses survive longer by improving their ability to persist and adapt to environmental changes (Gittell et al., 2006; Markman and Venzin, 2014; Ortiz-de-Mandojana and Bansal, 2016). A resilience-focused approach leads organizations to improve disaster management through awareness, flexibility, training and preparedness, engagement of managers and staff, and participation in a broader network of stakeholders (Gimenez et al., 2017). To be sustainably successful, entrepreneurs' need to have the resilience to overcome critical situations and even emerge from failures and crises is more robust than before (Duchek, 2018). Thus, sports entrepreneurs' resilience is essential to combat the COVID-19 crisis. Hence, the following proposal is presented:

Hypothesis 1. Resilience is positively related to positive (or less harmful) COVID-19 impacts.

2.2.2. Innovation and creativity

Creativity occurs at the individual level, while innovation occurs at the organizational level (Kapucu and Ustun, 2018). The majority of

researchers agree with the standard definition that a creative product is a novel and valuable product (Runco and Jaeger, 2012). Subsequently, some recent definitions add a third criterion, such as surprise (Boden, 2004) or nonobviousness (Simonton, 2012). Innovation is defined as the creation of new processes, products or services for the market that improve the overall competitiveness in the market (Li and Atuahene-Gima, 2001). Innovation is vital during crises, partly because of the new demands imposed by different stakeholders and partly because of the risk of standing still, which can lead to business failure (Amankwah-Amoah, 2021). Crises are usually associated with adverse effects among required changes but can also positively affect innovation (Faulkner, 2001; Roy et al., 2018). Adversity and crises incentivize some firms to innovate, which can reduce the negative effects of crises (Heinonen and Strandvik, 2020).

Crises have affected many sectors, presenting uncertainty in markets and driving waves of innovation activities (Amankwah-Amoah, 2021). Innovation is a coping strategy that has sustainable effects and can make a company stronger in the future (Wenzel et al., 2020). These process innovations are often characterized by minimizing errors and defects and discarding obsolete routines (Schilling and Shankar, 2019). This situation has been the case for COVID-19, which, although challenging organizations, many have demonstrated their ability to innovate through the crisis to become more resilient in the future (Fretty, 2020). In fact, according to Heinonen and Strandvik (2020), the COVID-19 pandemic prompted even the most efficient organizations to explore new ways to innovate, known as "CoviNovation". Several authors demonstrate the positive effects of creativity and innovation on business performance in general (Kariv, 2010; Munizu and Hamid, 2018) and during crises (Al-Ameedee and Abd Alzahrh, 2021). Hence, in this situation, the capacity for the innovation and creativity of sports entrepreneurs became a tool to combat the negative effects of COVID-19. Therefore, the following proposal arises:

Hypothesis 2. Innovation and creativity are positively related to positive (or less harmful) COVID-19 impacts.

2.2.3. Strategic orientation

Strategic orientation is defined as the firm's strategic tendencies, which characterize its activities and behaviors and seek to help the organization achieve a sustainable competitive advantage and improve performance (Hakala, 2011). The positive relationship between strategic orientation and business performance is assessed in previous research (Al-Ansaari et al., 2015). Published research linking strategic orientation and crisis assessment in SMEs is limited (Parnell et al., 2015). Preble (1997) point out that strategic management and crisis management have been evolving in isolation and separately despite their synergistic potential. This author points out that combining the crisis management approach with the strategic market positioning orientation can strengthen organizations' strategic management. In this vein, He and Harris (2020) highlight that postpandemic research will focus on how different strategic orientations benefit or constrain organizational responses.

Along the same vein, Wenzel et al. (2020) highlight that perseverance is a good strategy, although it is advisable to make strategic changes if a crisis lasts too long. Kraus et al. (2020), in their study of European family businesses, point out that some companies will have to make strategic changes to their future orientation if a crisis is prolonged. Penco et al. (2022) show how entrepreneurial orientation copes with the changing environment and helps address market opportunities. Thus, the following proposals are presented:

Hypothesis 3. Companies' use of innovation/R&D strategies when competing against their closest competitors before the COVID-19 crisis is positively related to positive (or less harmful) COVID-19 impacts.

Hypothesis 4. Strategies related to process improvement before the COVID-19 crisis are positively related to positive (or less harmful) COVID-19 impacts.

2.2.4. Business model adaptation

Business model adaptation is likely to happen under external threat conditions (De Reuver et al., 2013). According to Teece (2010), a business model can be defined as a "management's hypothesis about what customers want, how they want it, and how the enterprise can organize to meet those needs best, get paid for doing so, and make a profit" (p. 172). Adaptive capacity is a concept that has also been frequently associated with resilience (Gallopín, 2006; Stevenson and Spring, 2007). Walker et al. (2002) define adaptive capacity as an aspect of resilience that reflects learning, the flexibility to experiment and adopt novel solutions, and the development of generalized responses to broad classes of challenges. How firms adapt their business models to external threats and opportunities is still poorly understood (Saebi et al., 2017). However, some authors point out that the fit between the firm's business model and its environment can influence business profitability (Lawrence and Lorsch, 1967).

Prospect theory (Kahneman and Tversky, 1979) is used to predict behavior in the face of different stimuli. This theory indicates that managers are more inclined to engage in risky behaviors in the face of external threats, such as adapting the company's business model, than under favorable conditions. A study conducted by Saebi et al. (2017) found that the more severe the external threat is, the more likely firms are to engage in business model adaptation. In a recent analysis of the reactions of family firms in five European countries to the COVID-19 crisis, Kraus et al. (2020) identifies temporary business model innovation as a possible solution to recovery from the crisis.

In this vein, He and Harris (2020) notes that during COVID-19, production orientations and strategic flexibility are needed, while postpandemic competitive advantages are likely to ensue to organizations able to respond better to gain a first-mover advantage. For instance, Ceesay et al. (2021) analyze the importance of social entrepreneurship alliances and find that this type of alliance varies from other business relationships due to the social mission and the orientation of partners to the social cause; however, in the future, they may pursue commercial interests. In addition, in the case that investors are needed, it is recommended that institutional investors be sustainable, as they contribute to the environmental performance of companies (Kordsachia et al., 2022). These are some examples of possible business model adaptations and measures that could be taken to combat crises. Therefore, the adaptation of the business model through different initiatives, such as collaborations with other entities, the search for new suppliers or investors, and the introduction of new processes, among others, may be key to responding to the needs generated by the COVID-19 crisis. Therefore, the following proposal is presented:

Hypothesis 5. Intensifying existing partnerships, using new suppliers, or reorganizing operational processes during COVID-19 are positively related to positive (or less harmful) COVID-19 impacts.

COVID-19 has rapidly driven digitization in many industries that have continued to operate thanks to various digital platforms (Barnes, 2020). Digitization is defined as using digital technologies, such as information, communication, computing, and connectivity technologies, to promote organizational change (Sebastian et al., 2017). This process has the potential to help SMEs react effectively to public crises by stimulating their dynamic abilities (Vial, 2021). Indeed, SMEs that have used various digital technologies to cope with the COVID-19 crisis have improved their performance (Guo et al., 2020).

The current COVID-19 crisis, coupled with technological advances, has created a favorable environment for companies to transform their value chains and innovate (Amankwah-Amoah, 2021). Primarily, the importance of digital technology has become visible due to the need for small businesses to respond to customer needs during the COVID-19 crisis, which has brutally disrupted small businesses and necessitated rapid change (Ratten and Thompson, 2021). Moreover, in the specific

case of the sports industry, which has been affected by unprecedented changes because of social distancing, the use of new technologies to offer services is vital (Ratten, 2021). In this vein, He and Harris (2020) highlight that industries that once revolved around face-to-face interaction have found ways and means to engage and survive through online media, and it seems likely that much of this change will continue to be driven using online media. This has also been the case in the sports industry, where some sports businesses adopted the digitization of services and processes during the COVID-19 crisis to continue offering their services and products. Thus, the following proposal is presented:

Hypothesis 6. Increased use of technology during COVID-19 is positively related to positive (or less harmful) COVID-19 impacts.

3. Methodology

3.1. Participants

The sample was composed of 65 entrepreneurs in the sports sector who were running their businesses during the COVID-19 pandemic in a European country (Spain). These entrepreneurs created their personal training centers. They had a mean age of 32.86 years (SD = 5.18), comprising 23.10 % women and 76.90 % men. Regarding their academic training, 89.20 % were graduates or undergraduates in physical activity and sports sciences, 3 % had vocational training in sports, 3.10 % had no training, and 4.60 % had other nonregulated training. Regarding the size of their businesses, the mean number of employees was 4.42 (SD = 3.92), and they were small businesses.

3.2. Instrument

A structured questionnaire composed of the different scales presented below was used.

- Strategic orientation: This scale comprised six items and was extracted from Saebi et al. (2017). It captured the market development orientation of the entrepreneurs. The items were related to the measures that the entrepreneurs carried out before the crisis. Two items were selected from this scale: (1) innovation/R&D when competing against the closest competitors and (2) process improvement. These questions were answered with a dichotomous (yes/no) response.

- Resilience commitment: This scale was extracted from Lee et al. (2013) and was composed of three items that measure the ethos of commitment to resilience. These aspects were related to (1) the capacity of sports centers to respond to the unexpected, (2) the capacity to seek an appropriate balance between short- and long-term priorities, and (3) the capacity to learn from mistakes or problems. A five-point Likert scale was used to measure this variable, where one meant strongly disagree, and five meant strongly agree. The Cronbach's alpha of this scale was 0.60.

- Innovation and creativity: Three items composed this scale, which was extracted from Lee et al. (2013). This scale measured the entrepreneur's capacity to create an entrepreneurial culture in its center to foster both innovation and creativity. The items were related to the capacity of the sports entrepreneur to (1) encourage people to challenge and develop themselves through their work, (2) use their knowledge in new ways, and (3) reward thinking outside the box. A five-point Likert scale was used to measure this variable, where one meant strongly disagree and five meant strongly agree. The Cronbach's alpha of this scale was 0.63.

- Business model adaptation: Five items compose this scale, which was extracted from Saebi et al. (2017). This scale measured the extent to which firms adapted their business models during the crisis. Only one item and another adapted item were used. The following initiatives were assessed with this scale: (1) intensify existing partnerships, use new suppliers or reorganize operational processes and (2) increase the use of technology. These questions were answered with a dichotomous (yes/no) response.

- Type of impact: This scale was extracted from Saebi et al. (2017) and measured the type of external impact posed by the COVID-19 crisis. The sports entrepreneurs were asked to indicate their response on a 5-point Likert scale to the question, "To what extent was your personal trainer center affected by the COVID-19 crisis?" The response options were (1) strongly and severely negatively affected, (2) significantly negatively affected, (3) moderately negatively affected, (4) not affected, and (5) positively affected.

Finally, participants were asked a series of sociodemographic questions (gender, age, educational level, and company size).

3.3. Procedure

The data analyzed in this study were collected through a questionnaire sent online via the University of Valencia's platform (LimeSurvey 2.5). The links were sent to different sports institutions and shared on social media to attract the attention of these sports entrepreneurs. Data were collected weeks after the entrepreneurs' businesses were closed due to COVID-19 and before they reopened in adherence to the new measures. Data were collected from May 5, 2020, to June 7, 2020. The research was performed in accordance with the Helsinki and University of Valencia guidelines.

3.4. Common method bias

The language of the items comprising the questionnaire was kept as simple as possible to ensure no common method bias. To this end, double-barreled questions were avoided, and variables were reported before their measurement items to help structure the respondents' responses (Podsakoff and Organ, 1986). Two post hoc tests were used to assess common method bias: (i) Harman's single-factor test (Podsakoff and Organ, 1986) and (ii) the full collinearity test (Kock, 2015).

First, Harman's single-factor test was performed to test whether the variance explained by the 17 items grouped into a single factor was <50 %. In this case, the variance explained was 20.34 %, which was below the reference value limit and certifies that the study is not affected by common method bias (Podsakoff and Organ, 1986). Subsequently, the full collinearity evaluation method was performed. Variance inflation factor (VIF) values above 3.30 are considered an indicator of collinearity and that the data are possibly contaminated by method bias. Only if the VIFs (factor levels) of the test are equal to or <3.30 can the absence of common method bias be assured (Kock, 2015). In this study, all VIFs values for the factors were lower than 3.30, confirming that this study lacks common method bias.

3.5. Data analysis

First, Cronbach's alpha of the scales was calculated for internal consistency. Cronbach and Shavelson (2004) note that Cronbach's alpha (α) values ≥ 0.70 are considered high, those ≥ 0.60 are considered adequate, and those <0.60 are considered low. Then, to provide a deeper understanding of this phenomenon, a nonsymmetric method was used: fuzzy-set qualitative comparative analysis (fsQCA). fsQCA helps provide finer-grained insights into the complexity of entrepreneurial phenomena (Douglas et al., 2020). Its application in this field has experienced remarkable growth in recent years (Kraus et al., 2018). Traditionally, QCA is helpful when analyzing a small number of cases (Woodside, 2013).

fsQCA is based on the idea that relationships between constructs are "frequently better understood in terms of set-theoretic relations rather than correlations" (Fiss, 2011). This method is based on complexity theory and uses an inductive research method that relies on the principles of (1) conjunction, (2) equifinality, and (3) causal asymmetry (Misangyi et al., 2017). Conjunction refers to the fact that the antecedent conditions within a configuration operate in an interdependent way

instead of a discrete way. Equifinality is related to the existence of multiple effective combinations of conditions that lead to the same outcome. Causal asymmetry means that the conditions found to be related to the outcome in one combination of conditions (configuration) may be unrelated or even inversely related in another configuration. However, both are associated with the same outcome.

To perform fsQCA, the first step was to transform the raw data responses into fuzzy-set responses; thus, all missing data were deleted. Before performing the analysis, the analysis values were recalibrated because their values must be between 0 and 1. To calibrate the continuous variables (variables with more than two values), it is necessary to consider three thresholds. The literature recommends establishing the 10th, 50th, and 90th percentiles as thresholds (Woodside, 2013). Thus, the continuous variables of this study (innovation and creativity and resilience) were calibrated using the following thresholds: percentile 90 (high levels), percentile 50 (intermediate levels), and percentile 10 (low levels). The dummy variables (strategic orientation and business adaptation model variables) were calibrated using two values: 0 (entirely outside) and 1 (fully inside).

The next step was to calculate the necessary and sufficient condition tests to evaluate the effects of the different conditions on a particular outcome (COVID-19 impact) and the absence of the output (~COVID-19 impact). A condition is necessary when it must always be present for the occurrence of a particular outcome and when the consistency value is higher than 0.90 (Ragin, 2009). However, a sufficient condition expresses a combination of conditions (configurations) that can lead to a particular outcome. However, this particular outcome can also be achieved by other configurations (equifinality). To calculate sufficient conditions, fsQCA involves two stages (Eng and Woodside, 2012). First, a truth table algorithm transforms the fuzzy-set membership scores into a truth table that presents all logically possible configurations and their possible outcomes.

Regarding the frequency cutoff, Fainshmidt (2020) suggests that a frequency of one is appropriate for small to medium sample sizes but should be higher if the sample is larger. Thus, due to our sample's small size ($n = 65$), a threshold of one observation was selected. Selecting a frequency cutoff of one means that the configuration is considered if it is present in at least one case.

Second, fsQCA presents the three possible solutions: (1) complex, (2) parsimonious, and (3) intermediate. The complex solution is the most restrictive of the three solutions, while the parsimonious solution is the least restrictive. However, Ragin (2009) suggests including the intermediate solution, which is thus the solution presented in this study. In the sufficient analysis, solution coverage refers to how much variance is explained (number of observations that can be explained for the combination of conditions). Meanwhile, solution consistency represents the reliability that a model could have. Hence, to discover the most critical configuration, raw coverage should be considered. fsQCA 3.0 software was used to perform the analysis.

4. Results

First, the descriptive results are presented, in which the degree to which these personal trainers' businesses have been affected can be observed. As shown in Table 1, 23.10 % of businesses were strongly and severely negatively affected, 29.20 % were significantly negatively affected, 36.90 % were moderately negatively affected, 6.20 % were not affected, and 4.60 % were positively affected. (See Fig. 1.)

Table 1
The extent to which sports entrepreneurs were affected.

Type of impact	Frequency	Percentage
Strongly and severely negatively affected	15	23.10
Significantly adversely affected	19	29.20
Moderately adversely affected	24	36.90
Not affected	4	6.20
Positively affected	3	4.60
Total	65	100

4.1. fsQCA results

Second, the descriptive statistics and calibration values of the variables are shown. Table 2 shows the calibration of the study's continuous variables: resilience commitment, innovation and creativity, and COVID-19 impact.

The strategic orientation and business model adaptation variables were calibrated dichotomously as 1 (yes) and 0 (no). Regarding strategic orientation, before the COVID-19 pandemic, most of these sports entrepreneurs had improved their business processes (87.70 %). Before the pandemic, approximately half had innovated or conducted R&D (58.80 %) when competing against their closest competitors.

Concerning the measures taken during COVID-19 by these entrepreneurs, half of them had intensified existing partnerships, used new suppliers, or reorganized their operational processes (50.80 %). In addition, during COVID-19, many of these entrepreneurs had increased the use of technologies in their businesses (86.40 %). Table 3 shows the results.

4.2. Necessary analysis of the impact of COVID-19 precrisis measures (strategic orientation)

The necessary analysis was performed to discover whether any of the conditions were necessary for the positive (or less negative) and negative impacts of COVID-19 on the performance of personnel trainers' centers considering precrisis measures. A condition is necessary when the consistency is >0.90 (Ragin, 2009). The results obtained for both high and low levels of COVID-19 impact show no necessary condition. These results are shown in Table 4.

4.3. Sufficiency analysis of the impact of COVID-19 on precrisis measures (strategic orientation)

Then, a sufficiency analysis was performed with the conditions presented above. First, the two variables related to firms' strategic orientation before the COVID-19 pandemic were considered, i.e., presence and creativity and innovation and resilience. Ragin (2008) recommends a minimum consistency threshold of 0.75 when performing sufficient analysis in the truth table. The threshold for a positive COVID-19 impact was 0.85. A fsQCA model is informative when consistency is higher than 0.74 (Eng and Woodside, 2012). Five solutions were found

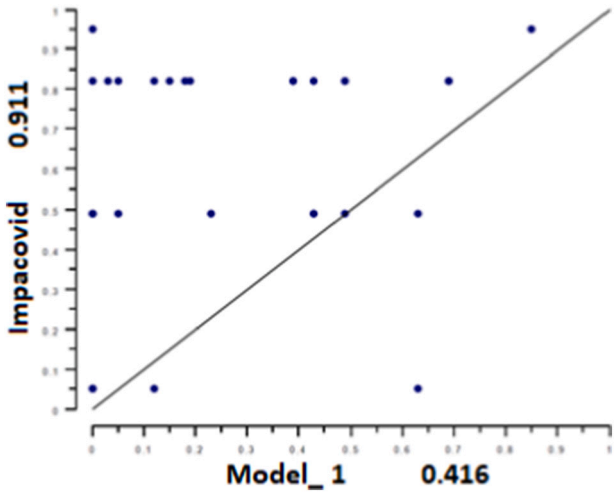

Fig. 1. Fuzzy plot of Model 1 using data from the holdout sample.

Table 2
Calibration values for the variables of resilience commitment, innovation and creativity, and COVID-19 impact.

		Resilience commitment	Innovation and creativity	COVID-19 impact
N		65	65	65
Mean		69.35	71.00	2.40
SD		31.39	35.56	1.06
Minimum		12.00	6.00	1.00
Maximum		125.00	125.00	5.00
Percentiles	10	36.00	24.00	1.00
	50	64.00	64.00	2.00
	90	125.00	125.00	4.00

Table 3
Calibration values for strategic orientation and business model adaptation.

	Percentage	
	Yes	No
Strategic orientation (Pre-COVID-19 measures)		
Use of innovation/R&D in competition against the closest competitors (SO1)	58.50	41.50
Process improvement (SO2)	87.70	12.30
Business Model Adaptation (COVID-19 measures)		
During the crisis, our company intensified existing partnerships, used new suppliers, or reorganized its operational processes. (BMA1)	50.80	49.20
During the crisis, our company has increased the use of technology. (BMA2)	86.40	15.40

Table 4
Necessary conditions for positive (or less negative) and negative COVID-19 impacts considering precrisis measures (strategic orientation).

	COVID-19		~COVID-19	
	Consistency	Coverage	Consistency	Coverage
Innovation and creativity	0.62	0.69	0.68	0.59
~Innovation and creativity	0.63	0.72	0.64	0.57
Resilience	0.61	0.75	0.57	0.55
~Resilience	0.63	0.66	0.74	0.60
SO1	0.66	0.63	0.49	0.37
~SO1	0.34	0.46	0.51	0.54
SO2	0.87	0.56	0.89	0.44
~SO2	0.13	0.60	0.11	0.40

Note: SO1-Innovation/R&D when competing against the closest competitors; SO3-Reduction in operating costs; SO2-Process improvement.

that were able to explain 67 % of the cases of high levels of positive COVID-19 performance (consistency: 0.81; coverage: 0.67). The most important configuration for a positive COVID-19 impact was high levels of resilience*innovation/R&D*process improvement (consistency: 0.83; raw coverage: 0.42). The second most explanatory configuration was high innovation levels*high levels of resilience*no innovation/I + D (consistency: 0.88; raw coverage: 0.37). The third combination was low levels of innovation *innovation/I + *process improvement (consistency: 0.83; raw coverage: 0.35). The fourth combination was low levels of innovation*high levels of resilience*process improvement (consistency: 0.92; raw coverage: 0.35). Finally, the fifth solution was high levels of innovation*high levels of innovation*no process improvement (consistency: 0.87; raw coverage: 0.03). These solutions were able to explain 42 %, 37 %, 35 %, 35 % and 3 % of the variance, in the positive or less negative impact of COVID-19.

On the other hand, two solutions were proposed to explain the negative impact of COVID-19, which explained 34 % of the cases. In these circumstances, the variables related to firms' strategic orientation before the COVID-19 pandemic were considered, i.e., absence and creativity, innovation, and resilience. When performing sufficient analysis, Ragin (2009) recommends a minimum consistency threshold of 0.75 in the truth table. The threshold for a negative COVID-19 impact was 0.78. The two solutions for the negative impact of COVID-19 are presented in Table 5. The most explanatory configuration for a negative COVID-19 impact was high levels of innovation*no innovation/R&D *process improvement (consistency: 0.81; raw coverage: 0.27). The second most explanatory configuration was high innovation levels*low levels of resilience*no innovation/I + D*process improvement (consistency: 0.78; raw coverage: 0.07). These solutions were able to explain 27 % and 7 % of the variance in the negative impact of COVID-19.

The notation employed by Fiss (2011) was used to present the results. Black circles indicate the presence of a condition, while white circles indicate the absence of a condition.

The predictive validity test was conducted following the recommendations of Pappas and Woodside (2021). The procedure was as follows: (1) the database was divided into two subsamples with an equal number of cases (sample size); (2) the first subsample was used to perform the fsQCA with the same criteria as in the original analysis with the total data sample (please see Table 5); (3) the fuzzy set models (configurations) were taken from the first subsample and were tested on the holdout sample (second subsample); (4) the different models were tested on the holdout sample, generating an XY plot; and (5) steps 3 and 4 were performed again using the holdout sample to test the models of the first subsample. Finally, the consistency and coverage values of the two subsamples were compared. The consistency and coverage values of the models from subsample 1 should be similar to those from the holdout sample for the different models presented on the plot. In this way, high predictive validity could be ensured.

The XY plot from Model 1 was tested using the holdout sample (Fig. 1). Models with consistency above 0.80 are useful and can serve to advance the theory (Woodside, 2017). In this case, the 0.911 value indicates high consistency, while the 0.416 value indicates coverage. These values indicate that the data are largely consistent (91 %) with the argument that Model 1 is a subset of the COVID-19 impact that covers 42 % of the cases. Thus, this test demonstrates that the solutions have high predictive capacity.

Finally, the robustness of the results was evaluated. The test to analyze changes in the frequency and consistency thresholds was evaluated (Muñoz and Kibler, 2016). The results did not differ drastically from the initial set, although small changes may generate significant changes in the final solution (Gonçalves et al., 2016). The results with consistency thresholds of 0.87 were as follows: (1) high levels of

Table 5
Sufficient conditions (intermediate solution) for positive (or less negative) and negative COVID-19 impacts considering precrisis measures (strategic orientation).

Cutoff frequency: 1	COVID-19 impact *Cutoff consistency*: 0.85					~COVID-19 impact *Cutoff consistency*: 0.78	
	1	2	3	4	5	1	2
Innovation and creativity		●	○	○	●	●	●
Resilience	●	●		●	●		○
SO1	●	●	●			○	○
SO2	●		●	●	○	●	●
Consistency	0.83	0.88	0.83	0.92	0.87	0.81	0.78
Raw coverage	0.42	0.37	0.35	0.35	0.03	0.27	0.07
Unique coverage	0.01	0.00	0.11	0.11	0.03	0.27	0.07
Total solution consistency	0.81					0.81	
Total solution coverage	0.67					0.34	

Note: SO1-Innovation/R&D in competition against the closest competitors; SO2-Process improvement; ● = presence of condition, ○ = absence of condition; Expected vector for COVID-19 Impact: 1.1.1.1 (0: absent; 1: present); Expected vector for ~COVID-19 impact: 0.0.0.0 using the format of Fiss (2011).

resilience*innovation/R&D*process improvement (consistency: 0.83; raw coverage: 0.42) and low levels of innovation*high levels of resilience*process improvement (consistency: 0.92; raw coverage: 0.35). In conclusion, all of the tests corroborate the predictive validity and robustness of the results presented.

4.4. Necessary analysis of COVID-19 impact crisis measures (business model adaptation)

The necessary analysis was performed to determine whether any of the conditions were necessary for the positive (or less negative) and negative impacts of COVID-19 on the performance of personal training centers. To consider a condition as necessary, the consistency must be >0.90 (Ragin, 2009). Focusing on the results obtained, for both high and low levels of COVID-19 impact, there is no necessary condition. These results are shown in Table 6.

4.5. Sufficiency analysis of COVID-19 impact crisis measures (business model adaptation)

Then, a sufficiency analysis was performed with the conditions related to the measures implemented during the crisis. First, the variables related to firms' business model adaptation, resilience commitment, and innovation and creativity were considered present. A minimum consistency threshold of 0.75 was used when performing a sufficient analysis in the truth table (Ragin, 2009). The threshold for a positive or less negative COVID-19 impact was 0.80. Three solutions were found that were able to explain 63 % of the cases of high levels of positive or less negative COVID-19 performance (consistency: 0.80; coverage: 0.63). The most important configuration for a positive or less negative COVID-19 impact was increased use of technology during the pandemic*high levels of resilience*intensified existing partnerships, used new suppliers, or reorganized operational processes (consistency: 0.86; raw coverage: 0.31). The second main configuration was increased use of technology during the pandemic*low levels of innovation and creativity*no intensified existing partnerships, used new suppliers or reorganized operational processes (consistency: 0.73; raw coverage: 0.27). The third combination was no increased use of technology during the pandemic*low levels of innovation and creativity*no intensified existing partnerships, used new suppliers or reorganized operational processes (consistency: 1.00; raw coverage: 0.05). These solutions were able to explain 21 %, 27 %, and 5 % of the variance in the positive or less negative impact of COVID-19.

In contrast, two solutions proposed to explain the negative impact of COVID-19 were able to explain 27 % of the cases. The condition related to the firms' measures during the COVID-19 pandemic (business model adaptation) considered absence, creativity and innovation, and resilience. The threshold for a negative COVID-19 impact was 0.81. This threshold is in line with the recommendation of Ragin (2008) that a minimum consistency threshold of 0.75 in the truth table is recommended. The most explanatory configuration for a negative COVID-19 impact was high levels of innovation and creativity*high levels of resilience*not intensifying existing partnerships, using new suppliers, or reorganizing operational processes (consistency: 0.84; raw coverage: 0.22). The second most explanatory configuration was no increased use of technology during the pandemic*high levels of innovation and creativity*intensifying existing partnerships, using new suppliers, or reorganizing operational processes (consistency: 0.72; raw coverage: 0.05). These solutions explained 22 % and 5 % of the variance in the negative impact of COVID-19 (see Table 7).

The notation employed by Fiss (2011) was used to present the results. White circles indicate the absence of a condition, while black circles indicate the presence of a condition.

As in the previous analysis, the predictive validity test was conducted following the recommendations of Pappas and Woodside (2021). This procedure was as follows: (1) the database was divided into two subsamples with an equal number of cases (size sample); (2) the first subsample was used to perform the fsQCA with the same criteria as in the original analysis with the total data sample (see Table 7); (3) the fuzzy set model was taken from the first sample, and the solutions were calculated as a model in the second sample (holdout sample); (4) the models were tested in the holdout sample, running an XY plot; and (5) steps 3 and 4 were performed again using the holdout sample to test all of the models of the first subsample. Finally, the consistency and coverage values were compared. The consistency and coverage values of the models from subsample 1 should be similar to those from the holdout sample for the different models presented in the plot to ensure high predictive validity.

Fig. 2 shows the XY plot from Model 1 tested in the holdout sample. Models with consistency above 0.80 are useful and can serve to advance the theory (Woodside, 2017). The 0.980 value indicates high consistency, while the 0.180 value indicates coverage. These calculations indicate that the data are largely consistent (98 %), and Model 1 is a subset of the COVID-19 impact that covers 18 % of the cases. The predictive capacity of the models is ensured.

Finally, the robustness of the results was tested. As in the previous fsQCA, changes in the frequency and consistency thresholds were evaluated (Muñoz and Kibler, 2016). The new solutions improving the consistency threshold did not differ substantially from the initial set, although small changes may yield significant changes in the final solution (Gonçalves et al., 2016). The results with a consistency threshold of 0.87 were the following: (1) increased use of technology during the pandemic*high levels of resilience*intensified existing partnerships,

Table 6
Necessary conditions for positive (or less negative) and negative COVID-19 impacts considering crisis measures (business model adaptation).

	COVID-19		~COVID-19	
	Consistency	Coverage	Consistency	Coverage
Innovation and creativity	0.62	0.69	0.68	0.58
~Innovation and creativity	0.63	0.72	0.64	0.57
Resilience	0.62	0.75	0.57	0.55
~Resilience	0.63	0.66	0.74	0.60
BMA1	0.55	0.61	0.82	0.43
~BMA1	0.45	0.51	0.18	0.50
Technology	0.86	0.57	0.45	0.39
~Technology	0.06	0.57	0.55	0.49

Note: BMA1-During the crisis, our company intensified existing partnerships, used new suppliers or reorganized its operational processes.

Table 7
Sufficient conditions (intermediate solution) for positive (or less negative) and negative COVID-19 impacts considering crisis measures (business model adaptation).

Cutoff frequency: 1	COVID-19 impact *cutoff consistency*: 0.80			~COVID-19 impact *cutoff consistency*: 0.81	
	1	2	3	1	2
Innovation and creativity		○	○	○	●
Resilience	●			●	
BMA1	●	○	●	○	●
Technology	●	●	○		○
Consistency	0.86	0.73	1.00	0.84	0.72
Raw coverage	0.31	0.27	0.05	0.22	0.05
Unique coverage	0.31	0.27	0.05	0.22	0.05
Total solution consistency	0.80			0.81	
Total solution coverage	0.63			0.27	

Note: BMA1-During the crisis, our company intensified existing partnerships, used new suppliers or reorganized its operational processes; ● = presence of condition, ○ = absence of condition; Expected vector for COVID-19 impact: 1.1.1.1 (0: absent; 1: present); Expected vector for ~COVID-19 impact: 0.0.0.0 using the format of Fiss (2011).

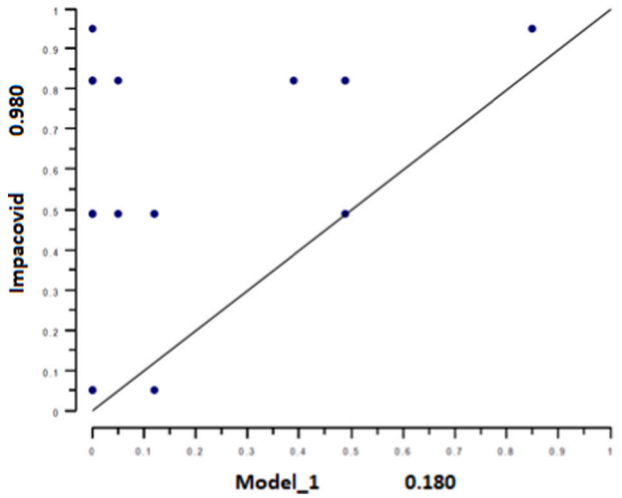

Fig. 2. Fuzzy plot of Model 1 using data from the holdout sample.

used new suppliers, or reorganized operational processes (consistency: 0.86; raw coverage: 0.31), (2) no increased use of technology during the pandemic*low levels of innovation and creativity*no intensified existing partnerships, used new suppliers or reorganized operational processes (consistency: 1.00; raw coverage: 0.05), and (3) increased use of technology during the pandemic*low levels of innovation and creativity*high levels of resilience (consistency: 0.92; raw coverage: 0.32). In conclusion, all of the tests corroborate the predictive validity and robustness of the results.

5. Discussion

COVID-19 was an unexpected event for sports entrepreneurs. Most of them were not prepared for such a disruptive event, as reflected in the reduction in their performance levels. This reduction could have been due to the lack of existing knowledge about crisis management in the sports industry (Ratten, 2020b). Only a small percentage of sports entrepreneurs indicated that their businesses were not affected or were positively affected. These findings are in line with Parnell et al. (2020), who point out that, although the sports industry is enterprising, the coronavirus pandemic (COVID-19) has hampered its ability to remain competitive. These findings are also in line with those of the COVID-19 Impact Report on Sports Facilities (Valgo, 2020), which shows that Spain's fitness centers have been affected to a large extent by this pandemic.

However, not all personal training centers have been affected in the same way. This difference exists because firms can respond to an economic downturn in various ways, by initiating either internally focused actions to adapt to changing environmental pressures or externally focused actions to modify their environments (Chattopadhyay et al., 2001). This study's findings show that a combination of different internal and external measures was necessary for this type of entrepreneur to be little affected by COVID-19. Commitment is one of the key internal factors to being a sports entrepreneur characterized by high resilience levels. This finding is in line with Duchek (2018), who notes that entrepreneurs' resilience enables them to overcome critical situations and emerge from failures and crises stronger than before to achieve sustainable success. In the same vein, various authors highlight resilience as a critical capacity to successfully manage all aspects of a crisis (Sanchis Gisbert and Poler Escoto, 2013). Therefore, according to Sheffi and Rice (2005), resilience should be a strategic initiative to increase companies' competitiveness. Thus, increasing sports entrepreneurs' resilience is vital to maintaining competitiveness during times of crisis.

In addition, sports entrepreneurs' necessary actions before the COVID-19 crisis that minimized the harmful effects of the crisis were innovation/R&D when competing against their closest competitors, and these actions were quite important. In addition, making process improvements before the crisis was also vital. These data are in line with Dobrowolski (2020), who point out the need to analyze the most effective measures before the crisis occurred. Furthermore, the results highlight the importance of entrepreneurship to maintain competitiveness in this sector, as previous studies also point out (González-Serrano et al., 2020). Therefore, continuously adopting a strategic orientation can help reduce the negative impact of unexpected events, such as crises of various kinds. In contrast, sports entrepreneurs of personal training centers that were most affected generally had high levels of creativity and innovation, had not undertaken innovation/R&D actions when competing against their closest competitors, and had improved some processes before the COVID-19 pandemic. Thus, strategic orientation prior to the crisis could help organizations achieve sustainable competitive advantages and improve performance (Hakala, 2011), making innovation essential in this case (Roy et al., 2018; Wenzel et al., 2020).

Regarding the measures taken during the COVID-19 crisis, the increased use of technologies during COVID-19 and the intensification of existing partnerships, the use of new suppliers and the reorganization of operational processes were two of the most important adaptations. Therefore, the COVID-19 crisis has highlighted the importance of technology in continuing to offer sports services. In the same vein, Hayduk (2020) points out that for sports entrepreneurship to maintain and increase its impact, more attention needs to be paid to the role of technology in sports. Therefore, it can be observed that the sports sector is trending toward digitalization (Ratten and Jones, 2020), which is one of the most critical factors driving international competitiveness in this industry (Jones et al., 2020). Furthermore, in a study on the COVID-19 crisis, Al-Omoush et al. (2020) highlight that social media have played a significant role; this observation also applies to the sports industry. However, according to the latest DESI report (The Digital Economy and Society Index), Spain exhibits relatively weak performance in the digitization of companies, especially SMEs, and is below the EU average in human capital indicators (European Commission, 2020). Therefore, in the present and future, sports entrepreneurs of personal training centers should improve their digital competencies and those of their employees.

However, these measures are not the only combinations of strategies that can generate this lower impact of COVID-19 on companies' performance. These data are in line with Muñoz et al. (2020), who point out that there is no easy solution for how policy makers or decision makers in SMEs should think and act to cope with or reorient business policies during a crisis. However, the measures presented above should be taken into consideration. Hence, these findings highlight the importance of entrepreneurship within contemporary society (Ferreira et al., 2019).

Sports entrepreneurs whose training centers were most affected showed high levels of innovation, creativity, and resilience. However, if they did not intensify existing partnerships, use new suppliers, or reorganize their operational processes, their performance was reduced during the COVID-19 crisis. Additionally, not increasing the use of technology during the pandemic was reflected in reducing personal centers' performance. This finding is in line with Ratten (2020b), who notes that sports businesses that are slow or unwilling to react to a crisis are likely to exhibit lower performance levels. This finding also highlights the vital role of technology during COVID-19. This pandemic has brought information and communications technologies to the forefront of human life (Barnes, 2020). Therefore, although perseverance is a good strategy, if the crisis lasts too long (as with COVID-19), it is worthwhile making strategic changes (Wenzel et al., 2020). In this case, intensifying existing partnerships, using new suppliers, reorganizing operational processes, and increasing the use of technology are vital. Thus, digital transformation is currently one of the greatest challenges for businesses of all sizes and ages (Kraus et al., 2019).

The actions carried out to respond to COVID-19 by sports entrepreneurs vary. However, entrepreneurship and resilience are of vital

importance for this type of sports entrepreneur. Innovative actions are forced by crises, and an entrepreneurial approach and the encouragement of intrapreneurship in employees are fundamental for these entrepreneurs to respond efficiently to unexpected events and reduce the negative impact on their businesses' performance. Along these lines, Donthu and Gustafsson (2020) point out that effort should be made to learn from the consequences of pandemic outbreaks to prepare society for when this kind of outbreak happens again. Training in technological competencies for the digitization of sports services and the continuously promoting an entrepreneurial spirit in their employees are two of the most important lessons that sports entrepreneurs should take away from the COVID-19 crisis. These results can be of great use to the sports industry during future crises that may arise, since they are cyclical and tend to repeat over time (Potter, 2001).

6. Conclusions and implications

Most entrepreneurs in the fitness industry have been greatly affected by the COVID-19 pandemic. These entrepreneurs have taken numerous measures that have caused their businesses to have been affected to a greater or lesser extent by this pandemic. For personal training business owners to be less affected by future crises, developing strategies to enhance the commitment to resilience in their businesses is paramount. Therefore, these entrepreneurs should improve their centers' ability to respond to the unexpected, seek an appropriate balance between short- and long-term priorities, and learn from mistakes and problems. To this end, strategic planning and continuous employee training can be of great importance. In addition, introducing new technologies can be of great help due to the behavioral changes resulting from this pandemic.

Additionally, strategies or measures taken during and before a crisis are essential. Among them, the development of activities related to innovation/R&D and process improvement stand out as the most important for this type of business to reduce the impact of a crisis. However, all of these strategies must be carried out as a whole and in combination with others if more extraordinary results are to be obtained. Therefore, it is not a question of specific actions at specific times but of a strategic and entrepreneurial orientation over time.

During a crisis, the measures carried out by intensifying existing partnerships, using new suppliers, or reorganizing operational processes have proven to be key strategies to reducing the harmful effects of this crisis. As mentioned above, it is not taking measures in isolation but, instead, combining these different measures that leads to better results. However, it should be emphasized that having a strategic orientation to the operation of personal training centers is nearly as crucial as taking such measures to adapt a business due to a crisis.

Therefore, the importance of innovation and entrepreneurship in this type of business is highlighted. In addition, personal training centers' digitization seems to be a current and future necessity if competitiveness in the sports industry is to be maintained. Due to the closure of personal training centers, the sudden outbreak of this crisis forced these sports entrepreneurs to use technologies that have appeared to stay. The maintenance of these online training services and the introduction of new online services are among the most critical strategies available to these sports entrepreneurs.

This study has several limitations that need to be highlighted. First, the sample size is small, and the sports entrepreneurs in the sample are from only one country, so these results should be interpreted with caution and cannot be generalized. Future studies should replicate this research with larger samples of personal training center owners from different countries. Additionally, the variables analyzed are limited. In future studies, new variables should be introduced to explain a more significant percentage of the variance in these companies' performance. Finally, this study has a cross-sectional design. In the future, it would be interesting to conduct longitudinal studies to analyze the impact of these measures over time.

CRediT authorship contribution statement

María Huertas González-Serrano: conceptualization, investigation, writing-original paper; methodology, software, writing - review & editing; Ferran Calabuig: supervision, writing - review & editing; Manuel Alonso-Dos-Santos: writing - review & editing, data curation and formal analysis; Javier Sendra-García: conceptualization, writing- review & editing.

Data availability

Data will be made available on request.

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