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20 ***Abstract***

21 This research studied the coaches' perceptions of the innovation programs of the Royal
22 Spanish Tennis Federation (RFET) during the period 2016-2020. Coaches are considered as
23 very relevant stakeholders of any sport federation due to their crucial role in delivering the
24 sport. A 29-item questionnaire adapted to tennis was completed by 132 certified tennis
25 coaches which were RFET members. Results showed significant differences between the

1 coaches with more than 20 years of experience in that they perceived more rivalry between
2 regional federations in the access to grants and more international competitiveness at high-
3 level tennis as compared to their less experienced colleagues. Coaches also considered that
4 the COVID-19 pandemic had negatively affected the innovation strategy and capability of the
5 organization. Furthermore, they identified a participation / grassroots player development
6 initiative and a coach education project as the two most valued innovative programs
7 implemented by the RFET in the studied period. These last findings coincide with the ones
8 obtained in previous research and highlight the relevance of providing coaches with clear
9 player development long-term guidelines and opportunities for continuous professional
10 development through education. It can be concluded that federation leaders and managers
11 should consider the perceptions of the coaches on the innovation programs of their
12 organizations to gain further insight on how to better provide initiatives that will satisfy their
13 needs and improve the effectiveness of their federations.

14 **Keywords:** innovation, strategy, sport, tennis, federation, coach

15 **Standard JEL codes:** D8, I3, L3, M1, O3, Z2

16 **Abbreviations**

17 BoD – Board of Directors

18 CSD – High Council for Sports

19 ITF – International Tennis Federation

20 NSF – National Sport Federations

21 NSGBs – National Sport Governing Bodies

22 RFET – Royal Spanish Tennis Federation

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25 commercial, or not-for-profit sectors.

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Introduction

Played by more than 80 million players worldwide, tennis is one of the most popular sports and, probably, the most popular racquet sport. Apart from being a sports discipline, tennis is a social, cultural, commercial and artistic activity. For some, it's a profession and for others it's a passion that has to be passed on to future generations (Martin and Martinez, 2014). Tennis offers social and competitive opportunities for players of all ages, genders and abilities. In the last decades, the tennis ecosystem has become an industry and a relevant actor in the entertainment business. As highlighted by several authors (Smolianov, Zakus and Gallo, 2015) different organizations have vastly increased their financial investment into both high performance and mass participation tennis. The appeal and value of tennis as a research topic has also increased in line with the growth, professionalization and commercialization of the game. In the quest for optimizing fan experiences, maximizing player performance and increasing mass adoption, different sport science disciplines have extensively explored tennis as a subject of study (Lake, 2019).

From a governance perspective, there are different organizations that operate in the tennis ecosystem. Private and public, profit and non-profit, local, provincial, regional, national and international. The national sport federations (NSF) are the national sport governing bodies (NSGBs) of the sport within their respective countries. As part of their roles of developing and promoting their sport, they should face a considerable complex scenario arising from government, commercial and social demands as well as internal stakeholder needs (Pedras, Taylor and Frawley, 2020). The Real Federación Española de Tenis (RFET) is the NGB of tennis in Spain. Founded in 1909, it is affiliated to the International Tennis Federation (ITF) and it has been considered one of the most successful NGBs in Spain due to its trajectory

1 throughout the years as well as to the recent success of players such as Rafael Nadal or
2 Garbiñe Muguruza (RFET, 2021). Within its governance, the RFET has different categories
3 of members: players, clubs, referees and coaches. In order to be RFET members, coaches
4 should have a valid coaching license issued by the RFET. The coaches play a crucial role in
5 the operation of the RFET (RFET, 2020). This relevance is the main reason why they have
6 been selected as the sample for this research.

7

8 Certainly, coaches are considered as one of the most important stakeholders in sport
9 organizations such as the NSFs. No matter if they work with children or adults, beginner or
10 professional, part or full-time, their role is complex and will likely vary according to a myriad
11 of contextual factors and personal characteristics. Among other reasons, studies have
12 concluded that they are critical in implementing and delivering sport programs (Buszard,
13 Oppicci, Westerbeek and Farrow, 2020). Research has also found that coaches play many
14 functions within their role. They plan, organize, conduct and assess training, competition,
15 management and education processes in their respective sports. The role that coaches fulfill is
16 based on their experience, knowledge, values, opinions and beliefs. Coaches activities are
17 considerably influenced by the NSFs in their territory and they may use innovative
18 approaches to their daily practices (ICCE, ASOIF and MET, 2013).

19

20 Innovation is a term used to refer to related constructs such as “invention”, “creativity” or
21 “change”. Even though it has been extensively studied in organizational research there is not
22 a unique definition, but it is commonly understood as “a means to organizational conduct and
23 outcome or performance [...] represents newness or novelty [...] as an instrument of social
24 and economic progress” (Damanpour, 2020, p. 3). In the sporting context, the role of
25 innovation is crucial. The specific characteristics of sport create an extremely favorable

1 ground for the generation of innovative practices in its organization, delivery and practice
2 (Tjønndal, 2017). In the case of tennis, several studies have investigated the role of
3 innovation in the game specifically focusing on areas such as new products like tennis rackets
4 (Kim and Pennings, 2009), strings (Gelberg, 1996) or balls (Cooke & Davey, 2007), and how
5 partnerships can generate new insights to help progress the sport (Kovalchik and Reid, 2019).
6 This research has concluded in general that the success of any innovative project relies not
7 only in its generation but also, as it may seem to be even more relevant, in the diffusion and
8 adoption of the innovation by the relevant stakeholders and the broader community no matter
9 if it is a product, service, technology or policy. Given the key role coaches play as deliverers
10 of the programs of tennis organizations, it could be considered as obvious to investigate their
11 views on the initiatives in which they have to take part to assist in the innovation strategies of
12 a sport such as tennis. The literature review conducted in preparation for this paper has
13 shown that this is not the case. In fact, to the authors' knowledge and surprisingly enough,
14 just one paper has studied the views of coaches on a specific program of a tennis organization
15 (Buszard, Oppicci, Westerbeek and Farrow, 2020), but no research has been conducted to
16 better understand the views of tennis coaches on the overall innovation strategies of a
17 national federation.

18

19 Therefore, the goal of this paper was to fill this gap in the knowledge and insight of the
20 innovative process of sports organizations by analyzing the perception of Spanish coaches
21 regarding the different programs offered by the RFET as part of its innovation strategy.

22

23 The structure of this paper is as follows: after the introduction, the theoretical background
24 summarizes the main aspects related to tennis, innovation, coaches and coaching. This is
25 followed by the material and methods section, which deals with the research context, the

1 research design, the data collection and the analysis. The next part is the results section,
2 which includes the data on the general descriptors, on the statistical analyses conducted, and
3 on the selected most relevant innovative programs put in place by the RFET in the period of
4 study. The discussion section compares the results obtained with those of previous studies
5 and their significance. Finally, the conclusions highlight the theoretical and practical
6 implications and applications of the study, its limitations, its contributions to the body of
7 research as well as the future lines of research.

8

9 **Theoretical background**

10 *Tennis and innovation*

11 Tennis and its industry have been considered a singular market within the entertainment
12 business as one of its most significant providers. The tennis market builds on the interest of
13 the fans, the number of players, the availability of venues, the quality of the deliverers and, of
14 course, the talent of its great stars (Garcia del Barrio and Pujol, 2015). Technological
15 progress has drastically transformed recently the tennis market and has allowed the
16 development of mass media to provide access to the game to large numbers of new
17 “consumers of leisure”.

18

19 From an innovation perspective, tennis is particularly considered a favorable scenario. The
20 fact that it needs a given equipment (i.e., rackets and balls) to practice has attracted the
21 interest of the manufacturing industry. Technical innovations in tennis equipment include,
22 among others, the spaghetti strings and the composite rackets (Gelberg, 1996), the racket
23 industry (Kim and Pennings, 2009; Laudone, Liguori, Muldoon and Bendickson, 2015) as
24 well as the adapted equipment (Buszard, Farrow, Reid and Masters, 2014) and its influence
25 on game results (Sheridan, 2006). Other relevant studies on innovation in the game have

1 focused on seeding (Sheridan, 2007), officiating (Hawk-Eye Innovations, 2007), early
2 introduction (Luitzen, Bollerman, and Delheye, 2015), wear creation (Chae, 2017), training
3 methods (Ren, 2018) or statistical services (Kovalchik and Reid, 2019). Very few studies
4 have been conducted on innovation in tennis programs (Buszard, Oppicci, Westerbeek and
5 Farrow, 2020) and, to the knowledge of the authors, none on the coaches' perceptions of the
6 innovation programs of a NSF.

7

8 Therefore, it can be considered that, over the last decades, the tennis industry has experienced
9 an ongoing renewal, with innovating firms introducing new products and services that have
10 addressed not only the supply side of their industry, but also its demand side. On the other
11 hand, innovation diffusion and imitation by competing firms in tennis is largely driven by
12 product endorsements by top professionals and advertising (Kim and Pennings, 2009).

13

14 In some cases, innovation in tennis has generated controversy and uncertainty in the market
15 (i.e., innovation in racket materials and design). The potential benefits of some new products
16 or services (i.e., the slower tennis balls) may cause doubts as they could provoke technical
17 uncertainty and uncertainty about the existence of a market for the innovations. This scenario
18 can occur no matter if the innovations are radical, incremental or continuous and its
19 characteristics help to better understand successes and failures of innovations in tennis
20 (Buszard, Farrow, Reid and Masters, 2014).

21

22 *Coaches and coaching*

23 From a general perspective, research has agreed that even though there is not a unique
24 definition of coaching, coaches are main stakeholders in the sport ecosystem. They are
25 considered the key actors in the delivery of instruction to participants in a range of sporting

1 contexts (Mallett, 2013). They are also generators of environments and contexts that
2 transcend the sport itself and foster healthy and holistic developments in people and
3 organizations (Côté and Gilbert, 2009). They play a central role in shaping the quality of
4 delivery of the various sport organizations and the practitioners and fans sporting experience
5 and their subsequent continued engagement in the sporting pathways. Therefore, coaches can
6 be viewed as "merely technicians engaged in the transfer of knowledge" or be encouraged to
7 consider their holistic role (Malloy and Rossow-Kimball, 2007).

8

9 In the past twenty years the tasks of the coaches have changed considerably as a consequence
10 of the professionalization and commercialization of many sports. The coaching roles have
11 increased in complexity due to the changes, continuous evolution, challenges and
12 developments within a highly unstructured environment. Throughout this process, the coach
13 has become an effective shareholder in an environment that is constantly developing in an
14 organizational and business context (Nash, Sproule, Horton, 2008).

15

16 Coaches' perceptions on different aspects of their job have received a considerable attention
17 from research. Studies have investigated their views on their coach education experience
18 (Nash and Sproule, 2012), their role frames and philosophies (Nash, Sproule and Horton,
19 2008), the social environment of their organizations (Allen and Shaw, 2009), the relevance
20 and application of sport science (Martindale and Nash, 2013), and the factors affecting
21 Olympic performance (Gould, Guinan, Greenleaf, Medbery and Peterson, 1999). Coaches
22 have also been the focus of innovation studies in teaching methodologies (Light, 2006), self-
23 reflection processes (Hughes, Lee, and Chesterfield, 2009), resistance to innovation (Trabal,
24 2008), entrepreneurial orientation (Koloba and Surujlal, 2013), entrepreneurial activity

1 (Jones, Jones, Williams Burnett, and Ratten, 2017) or perceptions of parental involvement in
2 youth sport (Surujlal, Dhurup, and Sooful, 2009).

3
4 Research in tennis has also concluded that together with competition, coaches are the most
5 important factor or policy area for international success of nations (Browsers, Sotiriadou and
6 De Bosscher, 2015a; 2015b; De Bosscher, De Knop and Heyndels, 2002). Development in
7 the sport has been attributed to innovations in technological advances, sport science, training
8 systems and performance analysis. However, little attention has been given to the views of
9 the coaches regarding these innovations. Recently, Buszard, Oppicci, Westerbeek and Farrow
10 (2020) explored how tennis coaches and working within tennis National associations
11 perceived the impact of implementing a modified tennis campaign on participation and skill
12 development in children and adults.

13
14 Based on the scenario presented in this section, it was considered relevant to explore the
15 perceptions of coaches, as key stakeholders, on the innovation programs of a NSF such as the
16 RFET.

17

18 **Material and methods**

19 The research context, the research design, the data collection and the analysis are presented in
20 this section.

21

22 *Research context*

23 National sport federations (NSF) are key actors within the sport system and as such they need
24 to justify their activities to their stakeholders. Together with the government, the sponsors,
25 the member clubs, the media, the players and the fans, the coaches are relevant constituents

1 (Stichweh, 2013). The complex environment affecting society in general and sport in
2 particular has caused considerable organizational changes geared to adapt the structure of the
3 NSFs to the challenges of these developments. As Ruoranen, Klenk, Schlesinger, Bayle,
4 Clausen, Giauque, and Nagel (2016) indicated the organizational adaptation has led to a
5 transformation of sport federations towards professionalization.

6
7 These major challenges facing these organizations include, among others, an increasing
8 competitive context both at high-performance and at participation level, a growing competition
9 in attracting funding and sponsors, higher demands in governance, integrity, transparency and
10 democratization, and calls for inclusion, equality and sustainability in the strategy and
11 management of their programs. Scholars have devoted much attention to most of these
12 aspects (Shilbury and Ferkins, 2011).

13
14 In the case of this study, the RFET is responsible for the promotion and development of
15 tennis in Spain. Its tasks especially include representing Spanish tennis at international level,
16 organizing competitions and events, dictating rules and regulations, coordinating the activity
17 of the 17 Autonomous Federations, delivering education for coaches and officials, and
18 promoting grassroots tennis in the country (Llopis-Goig, 2017). It is a private non-for-profit
19 organization partially funded by the High Council for Sports (CSD) and operates in a de-
20 centralized interorganizational network mode by governing its member organizations
21 operating in specific geographic regions (Chelladurai and Zintz, 2015).

22
23 Tennis is one of the most popular sports in Spain since it attracts people of different age
24 groups and skills levels (Ministry of Culture and Sports, 2020), even though the number of
25 registered players has decreased gradually during the last decade (Orfila, 2020). At

1 organizational level, the players, the clubs, the federations and the coaches are the basis and
2 the engine that drive the sport. From a business perspective, tennis in Spain clearly meets the
3 best conditions for commercialization as it is a sport for a lifetime that can be played all-year
4 round, at an affordable cost, and it has the attention of the mass media due to the outstanding
5 performance of great stars such as Rafael Nadal or Garbiñe Muguruza, among many, as role
6 models.

7

8 From a sporting performance view, the RFET and Spanish tennis have been considered as
9 one of the most successful NSFs in the country during the last decades (De Carlos, Alén and
10 Pérez-González, 2017; Torres, Martin, and Guevara, 2018). Internationally, research has also
11 found that Spain has been the most successful tennis nation in the world due to the
12 performance of its top players (De Bosscher, De Knop, and Heyndels, 2003). Nevertheless,
13 the economic crisis that has affected the country during recent times has had a considerable
14 impact in the finances of the RFET as well as other NSFs (García and Llopis, 2014; Puga-
15 González, España-Estévez, Torres-Luque and Cabello-Manrique, 2020).

16

17 Scholars have acknowledged the crucial role of Spanish coaches in the success of tennis in
18 the country (Lewitt, 2014). The holistic approach and the pedagogical methods based on the
19 relevance of movement, conditioning, effort and consistency used by Spanish coaches define
20 the signature of the so-called the “Spanish system”. This has allowed to the development of a
21 training and competition methodology that has proven successful throughout the decades in
22 part due to its practical application and its flexibility and adaptability to the individual
23 features of the players, the coaches and the contexts (García-González, Moreno, Moreno, Gil,
24 and del Villar, 2015).

25

1 Due to the characteristics mentioned above, the RFET is a unique NSGB organization that
2 plays a central role as key stakeholder in the Spanish tennis ecosystem and, as such, it was
3 felt that its innovation programs would be an appropriate subject of study.

4

5 *Case study analysis*

6 The purpose of this paper was to study the perception of key stakeholders such as tennis
7 coaches of the innovation programs delivered by the RFET. The case study analysis method
8 was used to explore a topic that had not yet been studied. Following the views of Desbordes
9 (2001), who indicated that this method was the most useful for understanding organizations
10 in the sport sector, comprehensive data on this dynamic process was gathered to better
11 understand the coaches' perceptions. However, issues on generalization, reliability, validity
12 and comparability have also raised some criticism about this method.

13

14 The data used for this case study was based on the first author's involvement with tennis and
15 was collected from a questionnaire and the analysis of content produced by the organization.
16 The period 2016-2020 was the timeframe of the study since during these years the RFET
17 implemented a series of programs in different areas of their activity. This period was chosen
18 as this was the mandate of the actual President and BoD of the RFET as stated by the Spanish
19 Government Law.

20

21 *Instrument for data collection*

22 The validated questionnaire used by Winand, Vos, Zintz, and Scheerder (2013) was adapted
23 for a tennis NSGBs. The attitudes and perceptions are assessed in three levels (managerial,
24 organizational and environmental) and at different subcategories of each level using a Likert
25 scale (1 = completely disagree to 5 = completely agree) in the 29-item questionnaire (Table

1 1). See Winand, Rihoux, Qualizza, and Zintz (2011), and Winand, Vos, Zintz, and Scheerder
2 (2013) for a full description of the original questionnaire.

3

4 **Insert Table 1**

5

6 The questionnaire included a section with open answers for respondents to indicate different
7 new initiatives which were implemented by the RFET during the last four years. This section
8 was adapted to tennis from the one used by Winand, Vos, Zintz, and Scheerder (2013) which
9 referred to innovative sport and non-sport services, products, projects, programs, initiatives or
10 activities that national federations can provide.

11

12 **Insert Table 2**

13

14 Further data and details were collected by analyzing relevant documents available in the
15 RFET website as done in previous studies (Caza, 2000).

16

17 *Sample*

18 Following the procedure conducted by Winand, Vos, Zintz, and Scheerder (2013) a
19 questionnaire was sent to a selected sample of coaches certified by the RFET, to identify and
20 analyze their perceptions on organizational innovativeness. They were identified as the ones
21 to be more likely aware of the relevant features of the current innovations put in place by the
22 RFET. This was a purposive example as indicated by Ringuet-Riot, Hahn and James (2014)
23 since these stakeholders were considered expert individuals, with a highly technical view of
24 the context, that are or can be affected by the achievement of the RFET's initiatives.

25 Therefore, it was thought that their expertise and knowledge could provide unique insights

1 and rich information to identify, recognize, and prioritize the issues of interest for the
2 research. Furthermore, they were related to the RFET due to their role of certified teaching
3 professionals.

4

5 *Variables*

6 Table 1 shows the levels, categories, sub-categories and items included in the questionnaire.
7 It also included items related to the COVID-19 pandemic as well as others adapted from the
8 results of previous research (Caza, 2000; Newell and Swann, 1995; Hoeber and Hoeber,
9 2012).

10

11 At the managerial level there were 3 categories and 11 sub-categories. At the environmental
12 level there were 5 categories and 9 sub-categories, and at the organizational level there were
13 3 categories and 6 sub-categories. In the open section of the questionnaire, 2 levels were
14 included: tennis and non-tennis, with 4 categories each one.

15

16 *Analysis*

17 SPSS v. 26 was used to carry out the statistical analysis. The normal distribution of the
18 variables was tested using the Kolmogorov-Smirnov test. Non-parametric tests were used
19 since it was found that data did not distribute normally. **Spearman's Rho was used to test for**
20 **correlations between the items in the different categories.** Mann-Whitney U was used to test
21 if there were differences based on the coaches' experience. The significance level was
22 established at 0.05.

23

24 Data in the open section was extracted and coded by level, category and sub-category using
25 key terms which generated descriptions of initiatives or projects that were matched with the

1 RFET programs. The innovative program most cited was considered the most preferred one
2 in each category as suggested by Winand, Vos, Zintz, and Scheerder (2013a), who considered
3 the number of innovations as relevant criteria in this section.

4

5 **Results**

6 This section includes the results on the general descriptors, on the statistical analyses and on
7 the most relevant innovative programs put in place by the RFET in the period of study.

8

9 132 certified tennis coaches took part in the study. 52,7% of the sample had 20 years or less
10 of tennis coaching experience, and 47,3% had more than 20 years of experience.

11

12 The results and the significant differences between the two groups according to the years of
13 experience of the coaches are shown in Table 3.

14

15 **Insert Table 3**

16

17 Significant differences between coaches of both age groups were only found in two sub-
18 categories of the environmental level determinants. Results showed that the more
19 experienced coaches perceived a more competitive national environment in the attraction of
20 grants as compared to the less experienced ones. They also perceived a more competitive
21 regional environment in the sport rivalry between regional tennis federations than their less
22 experienced counterparts. Significant differences between the two groups of coaches were
23 not found in the managerial and organizational level determinants. At managerial level,
24 results showed that all coaches had a positive perception of an attitude favoring change,
25 newness and contemporary management. At organizational level, the perception of

1 organizational culture, innovativeness and ability to lead change was also positive but had
2 less support than at the previous level. Experienced coaches also perceived that the COVID-
3 19 pandemic had a considerable impact on the strategy, structure and capacity to innovate of
4 the RFET as compared to their less experienced colleagues.

5

6 The correlations between the variables of each category are shown in Tables 3, 4 and 5.

7

8 Insert Tables 3, 4 and 5.

9

10 In the managerial level determinants, there were significant correlations in items related to
11 the attitude towards traditional management in terms of bureaucracy, inflexible structure and
12 tendency against change. Also, coaches that perceived an attitude favoring change and
13 newness in the organization also thought that it should investment in new services, take risk,
14 be open to change, to members' expectations and to club's and staff suggestions. In the same
15 way, coaches that perceived a tendency towards contemporary management in the
16 organization also favored professional management practices and the involvement in decision
17 making processes. Regarding the organizational level determinants, there were significant
18 correlations between all items. Therefore, coaches who perceived a given organizational
19 culture and relationships also perceived a tendency to general innovation of the organization
20 through strategies, policies and specific services together with a perception of the ability of
21 the organization to lead change. As per the environmental level determinants, significant
22 correlations were found so that coaches that had a perception of a competitive national
23 environment and external pressures to the organization for the attraction of members and
24 grants as well as the perception of a cooperative environment with other organizations also
25 perceived a competitive international environment at the high-level tennis competition.

1 Significant correlations were also found between the perception of COVID-19 impact on the
2 strategy and structure and the organization capacity to innovate.

3
4 Table 7 includes the innovative programs of the RFET most cited by the coaches classified in
5 levels, categories and sub-categories. Results showed that tennis services programs were the
6 most often considered as innovations. This can be understood as the coaches' preferences for
7 tennis programs over non-tennis ones. The most cited tennis program was a participation /
8 grassroots tennis project called "TennisXetapas" (Tennis by stages), a strategic long-term
9 plan for player development which provides technical, tactical, physical, mental and
10 competitive guidelines for coaches at each stage. It is delivered via a website
11 (www.tenisexetapas.rfet.es) which includes a textbook, video clips and various supporting
12 materials. The second most cited tennis program was the Online Symposium and National
13 Congress as part of the RFET coach education activities and continuous professional
14 development project. It was the first ever online Congress and offered free training to the
15 more than 850 coaches registered.

16
17 **Insert Table 7**

18 19 **Discussion**

20 The relationships of the results regarding the differences between coaches of both age groups
21 and the significant between the variables of each category with previous studies and their
22 significance will be presented in this section. Only references to studies conducted with
23 coaches will be considered.

1 At the managerial level, the support of an attitude towards contemporary management is in
2 line with the results of Ferkins, Shilbury, and Mcdonald (2005) who concluded that the
3 coaches in their sample perceived the need for the professionalization of management and
4 coaching as well as the commercialization of the federation. At the organizational and
5 environmental levels, the results in our study also are congruent with those of De Bosscher,
6 De Knop, and Heyndels (2003) who found that the professionalism of the federation and its
7 cooperation with regional federations and clubs were among the top five relevant factors for
8 international success in tennis.

9
10 In terms of the innovative programs identified, the fact that the coaches in the sample
11 considered that a participation / grassroots program geared towards the implementation of a
12 long-term plan for player development is the most innovative project of the RFET is in line
13 with the conclusions of Brouwers, Sotiriadou, and De Bosscher (2015a) who found that the
14 expert coaches in their sample recommended that the tennis federation provides coaches with
15 a clear development pathway and a clear coaching philosophy. The identification of a coach
16 education project as the second most cited innovation event of the RFET is also aligned with
17 the results of Brouwers, Sotiriadou, and De Bosscher (2015b) who found that expert coaches
18 of national tennis federations indicated that the coaches' education system of the federation
19 appeared to be one of the most important supporting policies for elite tennis success.

20

21 **Conclusions**

22 The theoretical implications of our findings help to provide a specific overview on the current
23 state of the innovation strategies in a tennis NSGB. From a practical perspective, several
24 implications for managers, administrators and volunteers can be drawn. As per the
25 management and organizational levels, the views of the coaches emphasize the need for sport

1 federations to establish contemporary professional structures and programs to accomplish
2 their work more efficiently and to adequately meet the expectations of a complex,
3 challenging and dynamically changing environment (Nagel, Schlesinger, Bayle, and Giauque,
4 2015). At the environmental level, the coaches have highlighted the competitiveness of the
5 tennis ecosystem in the search of grants and funding. The coaches in the sample have also
6 stressed the negative impact of the COVID-19 pandemic on the innovation capability of the
7 RFET.

8

9 In terms of specific innovations identified by the coaches in the sample, it is worth
10 mentioning the relevance of coach education and the opportunities for coaches to attend
11 events that will help develop their competencies (Brouwers, Sotiriadou, and De Bosscher,
12 2015b).

13

14 The case study design methodology and the sample size and type can be considered as
15 limitations of this study, despite they are not dissimilar to several previous research on this
16 field.

17

18 Future research lines include the study of the views of coaches about the programs of other
19 federations such as local (provincial), regional (continental) and international federations and
20 the study of perceptions of other relevant stakeholders such as athletes, club managers,
21 volunteers, journalists or fans, among others. A qualitative design study would help leaders
22 and executives to gain further insight on the perceptions of relevant stakeholders such as the
23 coaches.

24

1 This paper contributes to a deeper understanding of the perception of coaches on the
2 innovation programs of a relevant NSGB in a country. It provides interesting insight on the
3 management, organizational and environmental aspects of innovation in the federation. The
4 results have shown that coaches identify tennis services related to the provision of general
5 development guidelines and educational opportunities as the most valued innovative
6 programs delivered by the RFET in the period of analysis and that the COVID-19 pandemic
7 has negatively affected the innovation strategy and capability of the organisation. It can be
8 concluded that leaders and managers should take into account these perceptions to further
9 improve in the generation and implementation of innovative services to satisfy the needs of
10 their stakeholders.

11

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13

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16

17

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1 **TABLES**

2

3 Table 1. Levels, categories, sub-categories and items of the survey.

4

Levels and categories	Sub-categories	Items (n=29)
Managerial level determinants		
Attitude towards traditional management	Bureaucracy	1. The structure and responsibilities of the RFET are unlike private firms
	Inflexible structure	2. A traditionally formal and hierarchic administrative model is preferable to a flexible and less structured model
	Against change	3. Change to the internal functioning of the RFET can be counterproductive
Attitude favoring change and newness	Investment in new services	4. More financial investments (even risky) should be achieved by the RFET to develop new services for members
		5. The RFET should invest in the development of new services
	Risk taking	6. To achieve their goals, the RFET should take risks
	Openness to change	7. Change is globally a good thing for the RFET
	Openness to members' expectations	8. The RFET should deliver new expectations of their members
	Openness to club's suggestions	9. Suggestions of clubs should be taken into account by the RFET
Attitude towards contemporary management	Openness to staff suggestions	10. Paid staff have ideas that the RFET should take into account
	Professional management	11. The RFET should be managed like business firms
		12. It is important to have a clear mission and vision statement
	Involvement in decision making processes	13. RFET paid staff should be involved in the decision-making processes
Organizational level determinants		
Perception of organizational culture	Culture and relationships	14. RFET has an organizational culture and relationships between volunteers and paid staff that favors innovation
Perception of innovativeness	General	15. The RFET is innovative
	Specific services	16. The RFET provides innovative services, programs, products and events

	Strategies and policies	17. The RFET has coherent strategies and policies in place geared towards innovation
Perception of ability to lead change	Leadership within the organization	18. The RFET has an organizational ability with their volunteers and staff to lead the change
	Leaders champions	22. There is a clear commitment from the RFET volunteers to innovate in tennis
Environmental level determinants		
Perception of pressures	External pressures	20. There are external pressures to the RFET to change and innovate
Perception of competitive national environment	Attraction of members	19. RFET competes with other sports federations to attract members
	Attraction of grants	21. RFET competes with other sports federations to attract grants
	Competition with commercial sports providers	23. Commercial sports providers are a threat to the RFET's growth
Perception of cooperative environment	Cooperation with other organizations	24. The RFET cooperates with other tennis and non-tennis organizations to innovate
Perception of competitive regional environment	Sport rivalry between regional sport federations	25. There is rivalry between the different regional tennis federations
Perception of competitive international environment	High-level sport competition	26. International tennis competition between national sports federations is increasing
		27. Competition between national tennis federations to obtain international results is high
Perception of COVID-19 impact	Impact on the strategy and structure	28. COVID-19 has negatively affected the strategy and structure of the RFET
	Impact on the capacity to innovate	29. COVID-19 has negatively affected the innovation capacity of the RFET

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Table 2. Break-down of tennis and non-tennis services that can be offered by a NSGO.

Level and categories	Sub-category	
Tennis services		
Player development	Participation / grassroots tennis	Programs for players of different categories (i.e., 10, 12, 14, 16 and 18 and Under, adults and seniors).
	Performance / competition	Programs for players (i.e., sports policy, talent selection, training, “camps”, scholarships, etc.).
Competitive structure	Tournaments	Leagues, circuits, championships (i.e., organization, assistance, promotion, etc.).
Policy	Rules	Regulations, procedures for tennis play (i.e., amateur license, COVID-19, etc.).
Education	Activities	Education programs for coaches, referees, administrators (i.e., courses, conferences, congresses, publications, etc.).
Non-tennis services		
General	Management	General management and administration (i.e., procedures, registrations, sign-ins, etc.).
Marketing	Communication	Marketing and communication (i.e., campaigns, initiatives, etc.).
Resources	Equipment	Facilities and equipment (i.e., scholarships, grants, guidelines, etc.).
IT	Communications	ICT services (i.e., networks, platforms, etc.).
Other services	General	Other services (i.e., services provided but not included in the previous sections).

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1 Table 3. Results on the coaches' perceptions on the different groups according to their years of experience.

Item		20 years or less experience Mean (SD)	20 years or less experience Median (IQ)	More than 20 years' experience Mean (SD)	More than 20 years' experience Median (IQ)	Z	P	
Managerial level determinants								
Attitude towards traditional management	Bureaucracy	1	3.68 (1.01)	4.00 (2)	3.64 (1.11)	4.00 (2)	0.02	0.99
	Inflexible structure	2	2.99 (1.33)	3.00 (2)	2.90 (1.27)	3.00 (2)	0.31	0.76
	Against change	3	2.38 (1.13)	2.00 (2)	2.25 (1.08)	2.00 (2)	0.57	0.57
Attitude favoring change and newness	Investment in new services	4	3.90 (1.24)	4.00 (2)	3.84 (1.17)	4.00 (2)	0.51	0.61
	Risk taking	5	4.66 (0.54)	5.00 (1)	4.46 (0.87)	5.00 (1)	1.05	0.30
	Openness to change	6	3.96 (1.06)	4.00 (2)	4.00 (0.97)	4.00 (2)	0.07	0.94
	Openness to members' expectations	7	4.29 (0.83)	4.50 (1)	4.18 (0.76)	4.00 (1)	1.05	0.29
	Openness to club's suggestions	8	4.50 (0.82)	5.00 (1)	4.36 (0.80)	5.00 (1)	1.27	0.21
	Openness to staff suggestions	9	4.71 (0.52)	5.00 (1)	4.62 (0.69)	5.00 (1)	0.35	0.73
	Openness to staff suggestions	10	4.51 (0.76)	5.00 (1)	4.46 (0.79)	5.00 (1)	0.48	0.63
Attitude towards contemporary management	Professional management	11	3.04 (1.37)	3.00 (2)	3.00 (2)	4.00 (3)	1.40	0.16
	Involvement in decision making processes	12	4.69 (0.63)	5.00 (1)	5.00 (1)	5.00 (0)	0.78	0.44
	Involvement in decision making processes	13	4.47 (0.74)	5.00 (1)	5.00 (1)	5.00 (1)	0.98	0.33
Organizational level determinants								
Perception of organizational culture	Culture and relationships	14	3.03 (1.12)	3.00 (2)	2.92 (1.13)	3.00 (2)	0.53	0.60
Perception of innovativeness	General	15	2.88 (1.04)	3.00 (2)	2.77 (0.99)	3.00 (2)	0.36	0.72
	Specific services	16	2.94 (1.02)	3.00 (2)	2.79 (0.99)	3.00 (1)	0.66	0.51

	Strategies and policies	17	2.96 (1.06)	3.00 (2)	2.82 (0.96)	3.00 (1)	0.63	0.53
Perception of ability to lead change	Leadership within the organization	18	3.06 (1.17)	3.00 (2)	3.03 (1.22)	3.00 (2)	0.08	0.94
Environmental level determinants								
Perception competitive national env.	Attraction of members	19	2.90 (1.34)	3.00 (2)	3.16 (1.32)	3.00 (2)	1.18	0.24
Perception of pressures	External pressures	20	3.15 (0.90)	3.00 (0)	3.05 (0.81)	3.00 (4)	0.60	0.55
Perception competitive national env.	Attraction of grants	21	3.40 (1.07)	3.00 (1)	3.82 (1.07)	4.00 (2)	2.29	0.02*
Perception ability to lead change	Leaders' champions	22	2.97 (1.22)	3.00 (2)	2.95 (1.09)	3.00 (2)	0.07	0.94
Perception competitive national env.	Competition with commercial sports providers	23	2.18 (1.21)	2.00 (2)	2.18 (1.23)	2.00 (2)	0.03	0.98
Perception of cooperative env.	Cooperation with other organizations	24	3.16 (1.06)	3.00 (1)	3.11 (1.16)	3.00 (2)	0.12	0.91
Perception of competitive regional env.	Sport rivalry between regional sport federations	25	3.62 (1.13)	4.00 (1)	3.70 (1.10)	4.00 (2)	0.26	0.80
Perception of competitive internat. env.	High-level sport competition	26	3.90 (0.88)	4.00 (2)	3.59 (0.92)	3.00 (1)	2.17	0.03*
		27	3.88 (0.96)	4.00 (2)	3.64 (0.93)	4.00 (1)	1.50	0.13
Perception of COVID-19 impact	Impact on strategy and structure	28	3.38 (1.22)	3.00 (1)	3.70 (0.97)	4.00 (2)	1.45	0.15
	Impact on capacity to innovate	29	3.03 (1.33)	3.00 (2)	3.28 (1.11)	3.00 (2)	1.09	0.27

1 *Significant differences (p < 0.05).

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3 Table 4. Correlations for the category “Managerial level determinants”

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Ítems	1	2	3	4	5	6	7	8	9	10	11	12	13
1		0.16	-0.16*	0.22	0.15	0.17	0.14	0.09	0.02	0.11	-0.11	-0.07	0.01
2			0.28**	-0.12	0.01	-0.04	-0.13	0.04	-0.01	0.14	0.16	0.14	0.09
3				-0.20*	-0.16	-0.19*	-0.38**	-0.02	-0.13	0.03	-0.05	-0.01	0.00
4					0.33**	0.44**	0.39**	0.24**	0.19*	0.04	-0.03	0.16	0.17
5						0.31**	0.43**	0.39**	0.20*	0.24**	0.07	0.22*	0.13
6							0.54**	0.28**	0.16	0.15	-0.01	0.20*	0.10
7								0.40**	0.21*	0.00	0.16	0.15	0.05
8									0.41**	0.27**	0.07	0.31**	0.18*
9										0.24**	0.02	0.23**	0.25**
10											0.14	0.25**	0.45**
11												0.28**	0.11
12													0.42**
13													

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6 *Significant differences (p < 0.05). **Significant differences (p < 0.01).

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8 Table 5. Correlations for the category “Organizational level determinants”

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Ítems	14	15	16	17	18
14		0.53**	0.47**	0.50**	0.47**

15		0.84**	0.79**	0.66**
16			0.80**	0.66**
17				0.75**
18				

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2 *Significant differences (p < 0.05). **Significant differences (p < 0.01).

3 Table 6. Correlations for the category “Environmental level determinants”

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Ítems	19	20	21	22	23	24	25	26	27	28	29
19		0.22*	0.50**	0.41**	0.09	0.40**	-0.07	0.06	0.04	-0.13	-0.17
20			0.20*	0.03	0.01	-0.01	0.09	0.09	0.03	-0.05	-0.06
21				0.18*	-0.18	0.17	0.12	0.10	0.05	-0.05	-0.15
22					0.16	0.67**	-0.26**	-0.07	0.04	-0.10	-0.10
23						0.12	0.02	-0.10	-0.08	0.18*	0.08
24							-0.21*	-0.01	0.02	0.01	-0.14
25								0.37**	0.16	0.27**	0.17*
26									0.59**	0.07	0.07
27										-0.04	-0.04
28											0.50**
29											

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6 *Significant differences (p < 0.05). **Significant differences (p < 0.01).

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1 Table 7. Most cited programs or services provided by the RFET in the period of study as
2 identified by the coaches in the questionnaire.

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Level and categories	Sub-category	Most cited program or service
Tennis services		
Player development	Participation / grassroots tennis	“TennisXetapas”
Education	Activities	Online Symposium and National Congress

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