

WHERE TO DIGITAL TRANSFORMATION? MAPPING NEW TECHNOLOGICAL TERRITORIES IN RECREATIONAL SPORTS MANAGEMENT

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Abstract. *In-depth interviews concern eight representatives of Romania-based NGOs who organize competitions in cycling (MTB), trail running and tennis. Guided by the question: "What works and for whom in the adaptation of corporate digital strategies to managerial practices of recreational sport contests?", the analysis found that the accelerating rate of technological innovation requires race organizers to make quick adjustments to fit the moving target of volatile consumer digital preferences, whereas what works in one area (e.g. cycling) does not work in others. The overall trend of multiplication and proliferation of metrics complements the need for contextualized understanding of the addressability, scope and leverage of sport management practices in tune with the technological fast-paced advancement. To this end, contesters' stratification, real-time statistics and targeted commercials as Contest participants' netnography, i.e. forum posts about their experiences with digital innovations provide an overview into the social value of these tools, outside their status as drivers of brand equity. Instead it focuses on their utility as enhancers or disablers of participants' experience.*

Key words: *technological mediation; recreational sports management; performance metrics, digital innovation; sportainment.*

1. Why digitalization in sport management?

The emergence of sport as we know it today coincides with the process of industrialization, bureaucratic uniformization of rules, role specialization, the preoccupation for the accumulation of wealth and competing for resources, the rational organization of time to maximize return-on-investment (Heere, 2018; Yoshida, 2017). The development of sport as lucrative line of business reproduces and reinforces the social normative establishment of the culture of movement and sportification, nowadays oriented towards tracking and enhancing performance, featuring sportsmanship as value of self-improvement (Guttmann, 2006).

The current study aims to explore the means by which the digital transformation reshapes each stage of amateur sports competitions in running, cycling and tennis, from the perspective of sport organizers. It deals with how digital disruption changes the sports business ecosystem in its components of platform economy, value creation and analytics, by benchmarking four case studies from Romania. While it explores sport managers' perceptions as to the future of digital transformation in their line of work, it tracks the impact and feasibility of digital business strategies on the management of sports events, by looking at what is imported more or less successfully from other industries such as banking, retail or IT&C.

Digitalization in sports management practices addresses aspects such as process automation, data collection, storage and analytics, online communication, platform economy marketing practices and predictive analysis in customer relationship management. Each of these pillars of digital transformation elicits organizational responses in terms of repositioning competitive strategies for sustainable profitability (Vial, 2019).

In Romania the enthusiasm about digital transformation is vivid. The e-commerce market growth in Romania reached 30% from 2017 to 2018, and the ratio of digital buyers from the total Internet users increased from 35% to 43,5% in just one year (Pavel, 2019). Even if the Internet speed decreased, Romania ranks on the 37th position in a global survey; in 2017 it ranked fifth in the world as per Internet download speed, according to tests performed on more than 57,000 individual IPs in various regions of the country. In another recent survey (Ipsos, 2019), a national representative sample of corporate employees expressed positive emotions related to the future of digital transformation in their companies. Specifically, 84% of respondents declared they are curious, and 74% are optimistic about the digitalization dynamics in the Romanian business landscape.

The study aims to discover how non-governmental sports associations take advantage of digital transformation to fill a cultural and institutional gap in the Romanian sports culture. In terms of sport investment per capita to promote the culture of physical exercise, EU statistics show sharp disparities between member states (Eurostat, 2019). In 2017 the government spent €25 per inhabitant for sport and recreation in Romania in 2017, placing it above Croatia (€13 per inhabitant), Bulgaria (€16) and Slovakia (€23), slightly below Lithuania (€31) and Malta (€32) and way below all other member states, in a ranking led by Luxembourg (€492 per inhabitant), Sweden (€256), Finland (€206), Netherlands (€199), Denmark (€192) and France (€183).

In terms of share of recreational and sports services from total government expenditure, Romania is slightly below the EU average of 0,7%, with 0,5% (Eurostat, 2019). The deficit of governmental involvement to support sports programs reflects in a small share of people doing regular physical activities. In contrast to top-ranking countries where almost half of the population work out at least two and a half hours per week, which is the recommended baseline by the World Health Organization, Romania (7.5%) and Bulgaria (9.0%) recorded the lowest shares (Eurostat, 2017). Compared to other markets in the region, the Romanian private-owned fitness industry is still under-sized in terms of services and penetration rate or membership. However, the market has been rapidly evolving during the last years, due to increased interest and financial investment in organized physical exercise in a dedicated out-of-home facility. Romanian fitness customers aged 18 to 65 paid on average 30 to 50 euro for gym subscriptions as the latest available survey data show (State, 2016).

In Romania, amateur competitions in running, cycling and tennis are organized exclusively by private, non-governmental organizations. The majority of sports festivals and events happen in economically developed regions. For instance, Bucharest, Braşov, Cluj and Timișoara hosted 60% of the total number of running races organized in Romania in 2017 (Stan, 2019). In 2017, there were 188 running races organized in Romania, and these events belonged to a diverse typology, ranging from long distance (marathons, half-marathons and 10k), fun and family races such as 3k and park run, trail running and mixed races (duathlons and triathlons), to extreme and ultra-races (e.g. ultramarathon, Iron Man, mud run, sand run, 24h race, night run). The trend is of steady growth, slightly curbed in the previous 3 years, with a regional dispersion of sports events that privileges cities with the highest GDP/capita (Stan, 2019). The same study found that associations have a promotional strategy oriented towards mobilizing local communities and public authorities, but the online and overall digital component was missing from the analysis.

The paper emphasizes the practical implications of digitalization practices that organizers of amateur sports events resort to, through the lens of the research

question: "What works and for whom in the field of event management for amateur and recreational sports competitions?" It aims to provide situated know-how on the trajectories and future development trends of digital business practices valid for a specific range of events and a specific culture, with an emerging taste for amateur sports. For instance, these practices can prove non-applicable or peripherally important for professional sports competitions and in more mature markets.

2. The performative nature of technology

A conceptual paradigm that may prove fruitful for investigating the influence of the digital transformation across sports management stems from the assumption that "Technologies are ways of building order in our world" (Winner, 1980, p.127). In line with other philosophers of technology, including Don Ihde, Albert Borgmann, and Bruno Latour, Langdon Winner formulated it as far back as 1980, when he brought up the topic of the performative nature of technological artifacts and their involvement in shaping everyday life and power relations.

Instead of its definition as form of *poiësis*, which designates an action of making or building a product, Heidegger (1977) proposes a broader philosophical vision on technology as *alètheia* or bringing-forth" (*Her-vor-bringen*). This stance implies that technology allows for the emergence or unveiling of something that has existed before, but has not been discovered and unleashed into consciousness and praxis. This process of unconcealment or letting come to presence (Verbeek, 2005) is essential for the theoretical perspective that the current study employs when conceptualizing digitalization and its leverage on sports management. Hence, digitalization opens up a new horizon of opportunities that sports entrepreneurs can convert into business practices.

Kiran (2012) develops the idea of technological mediation to discuss the often elusive temporal forwardness and inapparent presence of technology into everyday lives: "Although we take them for granted, we organize many parts of our lives in accordance with the background technologies even if they are not taken up and used directly" (p.84). As digital transformation moves on at unprecedented pace, "The projects we regard ourselves to be able to undertake, to throw us into, are very much related to the technological possibilities we recognize in our lifeworld. Therefore, it is the potentiality and not the actuality of technologies that points us to future actions" (Kiran, 2012, 79). In relating to the sports events ecosystem, the socio-technological development reveals the potentialities of technological items that have presence even when they are invisible, idle or dormant. Under these circumstances, the concept of technological mediation can prove fruitful in elucidating socio-technical means by which the functionality and design of digital features can be optimized in relationship to customers' potential, preferences and expectations.

3. Big data and gamification in sport business management

Big data refers to high volumes of data, data processing speed, and the integration of a variety of data sources (Carter et al., 2018). Big data statistics elicits caution in sports management because they are not so reliable and robust as earlier presumed, while being as imperfect or biased as small data. Lupton (2015) claims big data often includes rotten digital data that is altered in ways in which its original creators may not have intended or imagined. The "bigger is better" accumulative ideology is vulnerable to criticism which calls upon big data analysts to enact reflexivity as to the sampling procedures and interpretive venues of decontextualized data sets.

The analysis of eSport (Spaaij & Thiel, 2017) found an increasing emphasis on tasks to structure video game play (e.g., achievements) and thus make them more compelling, yet less playful. Gamification seemingly nurtures this design that is output-oriented, not process-oriented. These task-focused reward structures that gamification processes import from the domain of play are stripped of their ludic qualities (Bateman, 2018). Thus, gamification promotes extrinsic motivation and volatility in customer preferences, by eliciting unsustainable, ephemeral attachment to a game, followed by quick shifts towards competitors. An analysis of the value creation and cultural mediation across the digital strategies for sport entrepreneurship revealed that emergent alternative cultures of parkour and street golf manifest resistance and opposition to such institutionalization practices (Lebreton et al., 2010).

The concept of gamification refers to the application of game design elements such as rewards, challenges, cooperation and competition, point scoring and leaderboards, into a traditionally non-game environment (Lister et al., 2014). The gamification design of apps monitoring health and fitness using devices such as pedometers, smart bracelets and smart watches is tuned to the principles of social-cognitive theory that envisions self-efficacy as key driver of behavioral uptake and consolidation (Bandura, 2004).

Furthermore, socio-technical practices introduced to experienced club cyclists led to performance improvement in terms of frequency and intensity of training, as well as route selection (Barratt, 2017). A process-based perspective on this technologically mediated gamification scheme through a ride-logging mobile application revealed the dynamics of engagement is a multi-stage affordance, with different digital features opportune to initiate and maintain the cyclists' training practices. Built on the principle of instant gratification, gamification schemes reveal a confrontational, extremely competitive system that incentivizes impatience, multitasking, fluctuating attention spans and thus contributes to augmented Millennial Burnout.

4. The management of amateur sport events and sportainment

Researchers often resort to case studies to decipher technological evolution trends and patterns using an inductive, bottom-up approach. Empirical findings showcase means through which technological mediation contributes to the conversion of amateur sports events into shows using media coverage. Digitalization thus supports the organizers' efforts to create visibility and buzz across a wide range of amateur sports events stretching from popular races and brandfests (Ermolaeva, 2014; Woolf et al., 2013) to ultramarathons (Gorichanaz, 2017). Digital transformation is involved in full-cycle cycling event management, from planning to post-event feedback collection and assessment, as Mackellar and Jamieson (2015) found using a process-based approach conducted in a rural South-Australian community.

Other studies (Larson and Maxcy, 2014, Gallardo-Guerrero et al., 2008) conceptualize digital innovation from the perspective of loss or deficit. The perspective of loss refers to what disappears or is removed when something else is gained. In professional cycling, Larson and Maxcy (2014) discuss the decision by which the global governing agency prohibited in-race two-way radio communication. This example provides a stance of technological innovation hindering the spectators' experience because of races becoming more predictable and less spectacular. Big data was involved in this decision, as data from 1436 road cycling races that took place from 1985 to 2010 revealed a significant correlation between the use of radio technology and event outcome typology, mainly the likelihood of breakaway success.

Lago-Peñas et al. (2019) reached a similar conclusion, tributary to the perspective of loss, about the impact of video assisted referee (VAR) on professional soccer matches. However, they also found positive effects in terms of the impact of the monitoring effect on players' discipline and thoroughness, as they noticed a diminished number of fouls, yellow cards and offsides in the wake of VAR tracking implementation. The dynamics of sports management is advancing in a fast-paced rhythm, hence the process-based approach would prove beneficial for future research designs like the current article adopts.

5. Method

5.1. Participants' profile

The research aim and ensuing questions require a qualitative explorative methodology. Six representatives of four amateur sports associations were interviewed using a half-structured guide. These representatives occupy a management position, namely three of them are general managers and the other three are project managers involved in the direct implementation and evaluation of sports events. Interviews took place in public spaces (i.e. cafes) during August and September 2019 and were of relatively extensive duration; they lasted between 90 and 130 minutes.

The case studied organizations have an experience between 5 and 20 years in carrying out sports events. Two of them are exclusively dedicated to trail running, another one (which is also the most senior on the market, with 20 years of experience) has a mixed profile, combining tennis as main activity with running (namely fun and family races and trail running) and MTB cycling, whereas the fourth one is exclusively dedicated to amateur tennis competitions. The first three organizations target also children across kids' races and tennis competitions grouped on age segment (4 to 10-year-olds with sub-categories).

The selection criteria for organizers was to have at least five years of experience in organizing competitions for amateurs in one or more of the following sports: running, cycling and tennis. Potential interviewees were approached using Facebook and the contact page of their website. Although there was no expected outcome in terms of response rate due to the scarcity of relevant data, there were very few responses in comparison to the number of approached organizations: 20 invitations and subsequent reminders were sent, however only four of them converted into actual interviews; the others did not refuse, but did not reply to the request. All informant associations are based in Bucharest, which is typical for organizers of sports events in Romania (Stan, 2019). Of a total of 188 running events hosted in Romania in 2017, 120 were organized by Bucharest-based associations (Stan, 2019).

Data was anonymized as presented in Table 1, for reasons of personal data protection.

Table 1: Informant associations' profile

Code	Type(s) of organized events	Experience	Regional distribution	Events statistics
O1	Trail running	11 years	Bucharest, Cluj, Sibiu	
O2	Trail running	5 years	Bucharest and metropolitan area Ilfov	
O3	Fun races, tennis, cycling	20 years	Romania – 31 counties, plus Bulgaria, Moldavia	4 tournaments for adults and 4 for children under 11

			and Italy	on average per weekend; approx..1000 participants to cycling and running events per year
O4	Tennis	7 years	Bucharest	80 participants attending per week

Participants gave their informed consent for their data to be recorded, transcribed and used in empirical analysis. The research did not include any material or financial reward for participation, only an indirect incentive as the researcher herself and her family actively take part in the sports events organized by these associations, as contesters. Interviews took place in Romanian and a native English speaker helped with the translation thereof. Most relevant fragments feature in the next section of results analysis accompanied by indicatives for the organization and the respective excerpt.

5.2. Interview guide

The interview guide is built around an operationalized approach to the topic of digital change in sport management. Its items also consider Vial's (2019) classification for areas of digital transformation in customer relationship management, process automation, data management (i.e. collection, storage and analytics) and marketing practices for platform economy. The table below features the dimensions and subsequent items thereof.

Table 2: Operationalization of the concept of digital change in sport management, according to the interview guide design

Dimensions of digital change	Corresponding items
Position on digitalization	What do you understand by digitalization in your field of expertise? What is its role in sport management? How does the association you represent position itself in terms of technological innovation? Can you provide some examples to back up your claim?
Pre-event	What does an online user account include? How do digital features influence participants' experience, in terms of registration?
In-event	Did you implement any digital novelty that happens during the competition? Do you consider any in-race innovation for the future?
Post-event	Did you bring any change to the results section? How about the rankings?
CRM (customer relationship management)	How can the user interface be improved? Have you done any improvement so far or are you planning to, in the near future? What is the impact of your newly added features on the attraction of new contesters? What is their impact for retaining recurring contesters? Does digitalization affect membership fees and the pricing policy? By and large, what would you say digitalization means for cost management and the financial strategy of your organization? Do you use elements of gamification? If so, what updates did you bring about to date? How does your target audience respond to these gamification elements?
Benchmarking	Was there any source of inspiration that you found particularly relevant?

	<p>Did you adopt any digital feature in design and functionality from your competitors? How much of it is borrowed and how much is adapted or reinvented?</p> <p>Did you adopt any digital feature in design and functionality from another industry, say retail or banking or tourism? If so, how did it work? What did you learn from these actions?</p>
Progress tracking, assessment and predicted evolution	<p>How did the platform develop in the last year or so? What features did you add, remove or update?</p> <p>Could you explain what is the process flow when the need appears for a platform update, e.g. adding a new feature or updating an existing one? Who does what, exactly, and what are the stages?</p> <p>Do you somehow measure the impact of new platform features? If so, how?</p> <p>What do you think the future holds in store in terms of digitalization and new technologies for your line of business?</p> <p>What would you like to do next, in terms of platform (website) functionality and appearance?</p>
Relationship to other stakeholders	<p>How would you describe your relationship with the programming team? Is it in-house or externalized to a third-party?</p> <p>Does digitalization impact on sponsorship or other partnerships (e.g. government authorities)?</p>

During the interviews, the website platforms themselves served as visual support to back up the informants' claims and elucidate the provided information. The above-mentioned items form the backbone of the half-structured interviews, but topics were not addressed in the exact same order for each association. The categories of meaning that guide the processing of empirical findings are structured according to two analytical axis: one is process-based and envisions the involvement of digitalization throughout the entire operational cycle of sport event management, from planning to implementation and assessment. Hence, it covers the following operationalized dimensions: D2, D3, D4 and D7. The other axis is thematic and deals with the following topics: stakeholder analysis, outlook on digitalization, future trends, customer relationship management (CRM) and benchmarking. It covers the remaining dimensions, namely: D1, D5, D6 and D8.

6. Empirical results

6.1. Thematic analysis - role of digitalization

Informants talk about digitalization in terms of its following components: process automation, big data and cloud, as well as predictive analysis. In relationship to technological change, they define their role as digital assessors, because they take up a process view on the technological development that they regard as gradually assimilating into their business DNA. This approach considers the technological change as evolution rather than revolution, steady rather than all-in and disruptive. One informant states: *"We use technology as accelerator, to simplify our lives and focus on the big issues. Technological advancement helps us externalize all administrative tasks: e.g. synchronize players', umpires' and courts' time availability through algorithms which we've recently introduced"* (O4, excerpt 7). This view resonates with the generally expressed idea that too much focus on current operations boils down to micro-management, which is detrimental to long-term foresight.

Across informants' accounts, the appeal to digitalization surfaces as must-have asset rather than nice-to-have attribute: *"Digitalization is not the side-dish, it's the main*

course. It changed from support function to core business, really.” (O2, excerpt 7). The predominant perception is that, in the present as well as the future, technology is essential for the value creation proposition, and sports managers need to stay abreast of latest advances to remain productive and gain competitive edge. Interviewees conclude that high quality managerial models need to incorporate digitalization into their backbone structure.

6.2. Customer relationship management

In terms of future socio-technological development, informants emphasize the role of segmentation and growing variety of add-on services. They regard optimistically the prospects that digitalization holds in store in terms of agile adjustment to customers' experience: *“Twitch-type live streaming and chat, creating group experiences by twitchers who comment the matches, multiplayer and flex-league options, it's all moonshots ahead and the sky's the limit.”* (O3, excerpt 5); *“Technology helps us expand to include other regions, other target groups, from the most competitive levels to alternative race systems. We can increase our capacity to handle a growing number of players and boost their experience in- and between tournaments, on and off-court, all this with slim fit costs”* (O4, excerpt 10). The former perspective regards technological change as effacing the boundaries between the online and offline realities and accelerating the transfers between these overlapping spheres. The latter outlook summarizes the role of technological change for sport business development and cost-cutting processes.

Aiming to elicit participants' long-term engagement by building a resilient community of practice, sports managers use technologies to tap into the undervalued potential of pre-race and post-race socialization. To this end, apps and email newsletters notify clients about a wide range of events such as: timed training sessions, social gatherings, cycling trips, weekend outings, humanitarian and environmental projects (e.g. reforestation field trips) or summer camps for children. Digitalization allows managers to strategize a shifted focus, in terms of unique selling point: from organizing competitions *per se*, to marketing a broader ecosystem based on the culture of movement and a sports-centric lifestyle.

Organizers have learnt by direct experimentation what works for each target group. The process flow of platform development thus happens incrementally, by step-by-step actions: *“We introduce something outside-the-box and we wait to see what catches on, what customers like or dislike. So we mostly measure that success in attendance rate, that's our main KPI”* (O1, excerpt 7). For instance, corporate employees in big urban areas such as Bucharest, Cluj, Timișoara and Brașov are fans of time-efficient and environmental-friendly practices that encompass self check-in, kit delivery in designated pick-up points and the no paper policy which eliminates printed confirmation letters, sponsors' leaflets or commercial brochures. There are platform economy solutions that prove ineffective in smaller communities that require a decentralized activation strategy: *“Word-of-mouth certainly travels faster than our newsletters and notifications in rural areas and little towns. The tennis tours of Beclean pe Someș, Reghin, Sighet, Târgu Lăpuș or Șimleu were fully booked and because the club owners talked face-to-face with players, created buzz on Facebook and also attracted local sponsors to offer prizes. So in this context it works better to involve the local organizers as much as possible”* (O3, excerpt 10).

6.3. Future trends, stakeholders and benchmarking

The informants discuss the importance of customization in the digital age. They believe their line of business requires them to develop tailor-made digital solutions

together with specialized software providers, instead of buying ready-made technologies implemented at large scale. Predicting promising venues for technological mediation to drive forward sport management was a preferred topic across all interviews. While toying with various scenarios when they talk about the future of technological change, the coolhunting of digital novelty sparks informants' enthusiasm: *"Djokovic currently invests in digitalizing tennis courts to provide amateurs with the professionals' experience. As player, you practically gain access to all the information you need, you check the match statistics to improve your technique, see break points won, net points won, winners, unforced errors, percentage of success for rallies and short points, break points saved etc. It's a dedicated coaching system, fully automatic, at your disposal"* (O3, excerpt 8).

Another direction for future technological mediation is to fuel bonding group experiences by designing apps for participants and supporters. Here too the interviewed organizers follow the international market trends in digital sports management and try to borrow what they deem is actionable for them: *"Pick2Go offers free-of-charge pictures of you during the race, provided you share them on Facebook, so it weaponizes this service for outreach and prospective activation. Also your fans can go to a photo kiosk and insert your bib number and pictures of them cheering are projected on building walls when the system detects you pass by"* (O3, excerpt 6).

The informants from all three sports (running, cycling and tennis) consider participants' photo tagging and video archive as competitive edge because it affords instant gratification in a thirst for monitoring performance. Their insight corresponds to Marlowe's (2016) view about the culture of photo sharing, infographics metrics and photo branding as effective tools to spark runners' interest. Race organizers pay attention to technologies that boost interaction between competitors and spectators, and strive to procure tools such as smart phone apps that allow marathonists to hear voice messages from their fans via an earbud or the Family Finder through which the family can watch the runner's trajectory on a screen that colors as he/she is getting closer, to be easily spotted and cheered. Spaans (2018) provides details about these apps that document and enhance each participant's journey.

Moreover, organizers incentivize runners to take pictures and post them on their social media accounts to win tax-free registration for the next competition. Such marketing practices are proven to render positive returns. In exchange, tags such as "my first race" or "my first half-marathon" do not yield results, as beginners are not interested in others knowing about their background and offering them support. Reminders about calls for registration risk to become counter-productive or annoying, as organizers have not yet discovered a steady pattern concerning periods of peak versus low registration. Post-race surveys asking for players' feedback are ineffective unless accompanied by an incentive such as discount for sports apparel or for enrollment in the next race. Aiming to improve the effectiveness of such practices, organizers feel they need to rely more on the analysis of collected data and let it guide them to strategically drive their future efforts.

In tennis, tournament statistics are recorded, but organizers feel they do not use them at their full potential to define core target and consumers' preferences so as to ensure effective year-round communication, or to install loyalty tools such as discounts or price bidding for court reservations and coaches. One informant describes the gap between present reality and anticipated future evolution: *"Digital opportunities allow us as organizers to focus on the all-inclusive process, to allow players to relive competitions, to develop a sense of belonging to a community active online and offline. We take small*

steps ahead for follow-up, proposing them training deals and using statistics to predict what is behind each player's buying decision" (O3, excerpt 9).

An interesting case of benchmarking appears below. O4 and O3 are competitors. The founder of O4 was a former customer of O3 who detected some weaknesses in the play management practices that he wanted to correct. He explains the head-start advantages such as introducing more levels for more balanced matches, having separate pricing policies, depending on customers' options to play with or without umpire. *"Our players' average age is higher than our competitors'. We target persons who appreciate more quality-oriented services like the possibility to book matches according to their own time availability. Also, players pay the court for the match duration, not the ones who lose the first match pay for those who qualify to the later rounds. Our pricing policy is more transparent and equitable, with a year pass valid for 365 days, not until the end of year, even when the cost is approximately the same" (O4, excerpt 1).*

Digital transformation intervenes in the communication between organizers and players: *"We choose the partner clubs according to customer feedback: we select carefully the courts which have the best kept surface, clubs which have facilities like clean showers and locker rooms, lounge, bar, kids playground, nearby park or other outdoor recreation amenities" (O4, excerpt 4).* Digital affordances reorganize amateur sports clubs and change them from recreational to competitive by means of metrics and gamification. The embodied mediation involves the human-machine interaction, as, for instance, bib numbers (tracking chips) are included for official race trainings as well as competitions themselves. This experimentation trend occurs with the diversification of digital capabilities, following the principle of "more is better". Proliferating affordances run the risk that some tactics, for various reasons, don't work. For instance, early booking discounts are not well received, ostensibly because participants experience cognitive dissonance with longer-term planning when assaulted by interposed and overlapped agendas.

Meanwhile, other practices do work, in terms of customer segmentation: *"There are tours for teenagers, seniors or women, rankings split according to performance category that produce the champions' tournament, by emulating the pros" (O3, excerpt 16).* Also the practice of using metrics to serve as branding vehicles delivers expected outcomes, e.g. the 10 k forest race with the biggest number of finishers under 50 minutes or the tournament with the highest ratio of decisive sets.

6.4. Process-based analysis: digitalization and the value chain of sport management

In terms of signaling upcoming events, the organizers send customized newsletters according to player's profile (i.e. history of past participation and area) and strive to keep them top-of-mind without being overbearing or too insistent and importune. The predicted next step would be push notifications in a dedicated app, not yet implemented: *"The application for Android and iOS will contain features such as: live webcam streaming, live score and push notifications 3 hours before the match is due to start. In six months-time we estimate it will be operational" (O4, excerpt 5).*

In the pre-event phase, the online registration borrows elements from tourism bookings and e-commerce. Representatives of the running association O2 argue in favor of the countdown system which signals the number of hours until registration closing time and thus attracts last-minute contesters. Conversely, for tennis competitions the countdown practice is unlikely to fill the target number of participants. Instead, stating how many available openings are still on the main board stimulates the sense of urgency for both adult and children's competitions.

Concerning the process of timing registration, there are different patterns that proved their effectiveness depending on the type of event. As such, cycling and running require a longer planning period: *"It takes a minimum of two months in which to promote the race by emails sent to our database of past participants and at least 5 rounds of such calls in order to reach the maximum number of 600 runners"* (O1, excerpt 3). In tennis, the registration span typically reduces to two weeks ahead of the weekend of the event: *"As organizers, our duty is to take care of tournaments not to cannibalize one another: how many competitions per week can a city handle? We learn as we go, from past statistics, but it's not a formula computed into some sort of artificial intelligence algorithm, we simply watch for fluctuations in the number of attending players and set the competitions calendar early on at the beginning of the season"* (O4, excerpt 2). Asked if they adjust this calendar during the year, sport associations representatives argue they normally do not, for reasons of predictability for all stakeholders (court administrators and players), *"especially during the summer which is peak season, but also in off-season, because we are fully booked all year round"* (O3, excerpt 14).

As outlook on projected development, tennis competitions organizers conceptualize the role of big data for players' ratings and rankings: *"In the future we intend to integrate the match statistics summary that the referee inputs as live score with the players' rankings. As such, competitors can check who is the most offensive (e.g. winners, aces), or the most spectacular player (who has the most net points won)"* (O4, excerpt 12). Collected data has also a function of uncertainty absorber that shifts the game dynamics from intuition- to fact-driven: *"Before the match begins, you can see your opponent's history and check, say, from 100 serves how many he serves near the median, at the exterior or at the receiver's body and you know how to position yourself and what game play tactics to adopt"* (O4, excerpt 13). The pre-event upgrades and projected enhancement thus refer to detailed built-in statistics connected to the players' profile. Organizers feel such features would influence positively customers' experience and subsequent retention.

6.5. In-event innovation

Instant metrics are the quintessential part of the full-service experience: *"When they reach the finish line, participants can see on the screen their standing in their gender and age category and overall position, net time and official time, and we do our best to add something new each event to present rankings on the in-site leaderboard and online too in elaborate and smart ways"* (O1, excerpt 10). The accumulative logic of incremental and continuous digital improvement transpires in this insight.

Digitalization allow for more affordable options in terms of live performance, tracking results and race organization so that amateurs feel treated like professional athletes, as the following account argues: *"We are subcontractors of mylaps.com, we install and maintain their tracking equipment, carpets and milestone signage for race timing, and people realize how important it is to keep accurate track of time, even if they are not pros, they need this certainty that quality timing brings"* (O2, excerpts 3).

Informants discuss also the potential of incorporated technological mediation to maximize contesters' in-race experience by comprehensive metrics projected in unconventional milieus: *"You can use smart glasses and other augmented reality devices to transfer data from your smart watch or bracelet and project them in front of your eyes, so you can see your average stride and speed, the estimated time of arrival and compare it to your personal best or your target split time per kilometer"* (O1, excerpt 2). Digital data are close to skin to help participants reach their objectives and come back for more, but sometimes data go beneath the skin: *"Technological innovation*

is amazing. Think of apparel that repels perspiration, but more so, think of having a bib chip a bit bigger than a grain of sand implanted in your palm, with which you can check-in for the race and which records your race time. Like I read they have implanted chips to replace physical passports in Sweden, for instance” (O2, excerpt 3).

6.6. Post-event innovation

A gamification feature that also bridges the gap between amateurs and pros is the ELO-based rating system: *“Each match and each tournament return ELO points according to multiple factors such as sets won vs. lost ratio, games won vs. lost ratio, your competitor’s track record and previous direct matches. It is comparative and self-correcting. Your achievement features on the main dashboard and brings you shop discounts to elevate your performance.”* (O3, excerpt 12). Tours themselves are ranked, according to the number of players, court facilities (e.g. the presence of chair umpires) and prize value.

The role of big data is to assist managers in diagnosing growth opportunities, trouble spots and designing the agenda of future events calendars: *We currently have 500,000 matches in our database, approximately 20,000 each year, so the algorithm is well-fed. The system automatically looks at performance metrics and returns actionable feedback. It’s like an E.K.G. It allows us to read the signs, see real-time statistics on participants, tournaments, which areas have grown or decreased or stagnated”* (O3, excerpt 15). To avoid the danger of over-competitive rankings that gamification schemes engender, tournaments for children under 11 only feature in-tour match statistics, however the players’ hierarchy of previous results is not computed.

6.7. Platform assessment and progress tracking

The framework functionality of online platforms is essential in sports management for an agile diversification of services, when the need arises to switch between event types, change structures to organize corporate championships or on-board new franchise events. One informant gave an example of marketing strategy and event positioning that can make or break investment: *“With Music Run, we bought its license and tried to bring a major beer company to sponsor it. We went to the Netherlands to see the event live, but it was a deal-breaker, it failed. I understood why: they promoted it to the wrong category of runners: to marathonists who for the most part were not interested in fun runs, so the attendance was really low. That’s when we learnt our lesson about customer target group segmentation that we need to look into more carefully”* (O3, excerpts 11). Other instances of portfolio diversification that organizers tried out with favorable outcomes include: family races, canine races (‘run with your dog’) and fun races (e.g. Color Run).

As per the brand image, organizers are aware of the digital platform design input for organic growth and they outline means by which to make it more impactful: *“If our image is more visible for target audiences of participants and local partners, then we depend less on sponsors, if some of them decides to stop cooperating with us, we can handle it more lightly because we are top-of-mind and can attract other sponsors to replace swiftly the ones that left”* (O2, excerpt 2). Beside functionality features, for informants, the digitalization of the platform interface also means updates in graphical design: *“How well the site appears is important, not crucial as in e-commerce, but still... It has to have sleek, clean lines granting simple access to the main menu: tours, registration, results, rankings”* (O4, excerpt 14)

The limitless potentialities of technological mediation to reshape sport management illuminate the vision of performative artifacts that Verbeek (2005) and

Kiran (2012) analyze. Interviewees realize they have not reached the top-notch level that technological innovation reached in developed markets: *“These latest innovations are still futuristic and fictional in Romania, when we are still struggling with automating basic stuff like booking matches and the randomized allocation of participants to matches.”* (O3, excerpt 4). Interviewees translate the transition from operational to strategy building which technology facilitates into time use benefits. They fill-in the available time slots that result from externalizing routine tasks with more challenges for business development. Informants are keen to benefit from the scalable input of automation, by expanding the use of digital innovation to other non-CRM processes and support functions such as: facility management, finance and accounting, human resources, logistics, quality assurance and maintenance.

7. Conclusions

The study elaborates on socio-technological practices that have unequal effectiveness in driving players' retention in amateur sports management. This case study captures a transitional stage of semi-automated processing of sports management operations, a stage in which sports managers do not regard technology as a black box type of container, but a tool in the making. Empirical findings suggest that non-governmental sports associations take advantage of digital transformation to fill a cultural and institutional gap in the Romanian sports culture, evident also from the statistics on the level of sport investment per capita, presented at the beginning of this study. Technological change helps promote the culture of physical exercise by affordances of accessibility, transparency, affordability and straightforwardness. The study sought to explore socio-technological practices that are more or less effective across specific organizational contexts in the area of event management for recreational sports competitions.

Event organizers agree that digitalization allows for swifter and more consequential customer-oriented communication by upgraded feedback implementation. What's more, from the operational business perspective, digitalization means simplification and more focus on strategy, by decentralization such as creating administrators' roles on the platform for local organizers and subcontractors. Digital development allows managers to externalize non-core processes, multiply the value chain and leverage more collaborative business development flows. Across informants' accounts, technology represents an enabler that facilitates agency and forward thinking. In this sense, sports managers feel stimulated and challenged, in the context of technological change, to come up with initiatives that prevent them from remaining on the receiving end of determinism

In relating to the sports events ecosystem, the socio-technological development reveals the potentialities of technological items (e.g. features of digital platforms and apps) that “have presence even when they are invisible, idle or dormant” (Kiran, 2012, 79). This outlook is valuable for exploring the virtual life-worlds that technological mediation brings about, bearing in mind that nothing is final and definite, while everything remains to be discovered and unveiled. The concept of technological mediation attests to the amplifying complexity of the socio-sport management.

The outlook on technological change testifies to socio-technological performativity. Sports managers believe that changes are not only inescapable, but also irreversible, because, once users grow familiar with new and comfortable features, they will not accept to revert to the old *modus operandi*, e.g. check online schedules by themselves once a personalized push notification is sent. The race to the top knows no

downturn and no escape route and no return in sight, only upscaling, upgrading and perpetual optimization.

Organizers of sports competitions expect digitalization to facilitate the uptake of physical exercise and its consolidation through regular practice that converts into serious leisure. From the perspective of amateur sports participants, the case studied organizations forecast future technological breakthroughs to build customer loyalty by installing sports as lifestyle and persistent pastime choice. Digital business strategies speculate on the customers' constant desire to learn and self-improve and on their sense of belonging to a collective lifeworld of like-minded people who share the same ethos. The elucidation of how digital disruption reconfigures these aspects can drive forward the discussion on what business practices enhance the value proposition of amateur sports management in the new technological context.

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