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International Journal of Esports



Current issues of sustainability in esports

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Abstract

Aims: Sustainability refers to the ability of esports to survive or persist. The aim of the paper is to explore emerging themes that support the development of a sustainable esports industry.

Methods and results: This study is based on a workshop methodology, which aims to identify and explore topics perceived as most pertinent by individuals with an intimate understanding of the dynamics of the esports context. Two workshops were held with a total of 64 participants, representing both academia and esports industry stakeholders. Interpretations of the sustainability of esports were thus recorded, developed, critiqued, and refined through social interaction with experts. The results indicate three critical themes to address regarding the development of sustainability of esports, namely a) health and inclusiveness, b) the incomplete industry structure, and c) the immature business logic.

Conclusions: We argue that sustainability is dependent on how well esports industry stakeholders can address the identified themes. Currently, social sustainability is the primary concern of both practitioners and researchers of esports. Economic sustainability mostly deals with securing business growth, while environmental sustainability is not yet perceived as a relevant topic (e.g., using sustainable technologies and energy-saving related to gaming and competitive events). Structures and processes within esports presently constitute the focus of sustainability in esports.

Keywords: esports, sustainability, economic sustainability, social sustainability

Highlights

- Sustainability in esports has mostly centered around economic aspects, while social issues are currently rising to the forefront.
- Three themes currently illuminate which issues must be addressed to achieve a sustainable esports industry: health and inclusiveness, incomplete industry structure, and immature business logic.

- If esports is to become sustainable, these aforementioned emerging themes require effort to be addressed from both practitioners and researchers.

Note: Data collection within this research was conducted before the global outbreak of COVID-19.

Introduction

While research on esports continues to increase, new perspectives emerge regarding future opportunities and research avenues related to the industry. Currently, prominent esports research areas include media studies, informatics, business, sports science, sociology, law, the convergence of gaming and gambling, and cognitive sciences [1]. In addition, new combinations of applied theoretical lenses will continue to open innovative avenues for researchers as the esports industry evolves. Nevertheless, esports and the role of esports in society are often under-researched, although esports, as evidenced in the current pandemic, can act as a future lab for the digitized society [2].

Esports is a multifaceted social phenomenon but is often regarded as a business or an economic industry [3]. Despite impressive estimates of the industry value at approximately 25 billion USD [4], this narrow perspective underestimates the complexity of the ecosystem and how various stakeholders act to advance and broaden the industry. A recent topical issue of the esports industry concerns its sustainability [5] which has so far received scant attention in academia, despite becoming an essential ingredient of corporate strategies and business models within esports [6-7]. Recent work finds that more research is required specifically in terms of weaknesses and threats to the industry [8].

As esports continue to grow, sustainability will become increasingly relevant for any stakeholder, despite individual actors in the ecosystem often lacking sustainability. Within esports, sustainability has hitherto centered around the stability of the industry and securing business growth [5], consequently, research addressing sustainability in esports relates to the continuity of the industry and its communities, and how esports should develop to grow and stay competitive. Therefore, it is vital to explore sustainability in esports from new perspectives, including economic, environmental, and social sustainability [9]. Economic sustainability refers to the more effective use of resources concerning economic growth, while environmental sustainability relates to the maintenance and improvement of natural support systems and services for current and future generations of living creatures. Finally, social sustainability refers to the physical well-being and basic needs of individuals, quality of life, and equity (see Table 1). Consequently, as the triple bottom line model of sustainability [10] depicts, all dimensions benefit from and support each other.

Table 1: Sustainability concepts in esports

Sustainability concept	Definition
Economic sustainability	The effective use of resources concerning economic growth.
Social sustainability	The physical well-being and basic needs of individuals, quality of life, and equity.
Environmental sustainability	The maintenance and improvement of natural support systems and services for current and future generations of living creatures.
Esports sustainability	The ability of esports to survive or persist.

This paper addresses the issue of sustainability in esports by mapping emerging developmental areas within the esports industry in need of attention and effort. As a result, it addresses sustainability issues related to esports, while providing a holistic overview of the industry, its ecosystems, and value-creation logic. The aim of the paper is to explore emerging

themes that support the development of a sustainable esports industry. The following research question guides the study: *What issues must be addressed to develop a sustainable future for esports?*

Method

To investigate and identify issues related to the sustainability of the esports industry, a workshop research methodology was deemed to be the most suitable. Workshops are similar in style to focus group methods and are particularly suited to fulfil a specific research purpose [11]. They are especially well-suited for exploring and identifying research areas or challenges that are vague and inexplicit [12] or include complex motivations and behaviors, while affording diverse views [13]. The workshop methodology allows for the identification and exploration of those topics perceived as most pertinent by individuals with an intimate understanding of nuances and dynamics of the esports context [14]. Furthermore, a workshop research methodology allows us to record individual interpretations of the industry and have those initial interpretations developed, critiqued, and refined through social interaction with other experts [15]. Thus, a workshop setting enables a range of individual experiences to be synthesized into a 'collective sense' [16].

Research design

Workshops as a research methodology have no specific procedures or scripts regarding methodological issues [17]. However, both primary and secondary data may be produced from workshops [18]; the former emerges in real-time, and the latter is formed in retrospect through representations and accounts of what took place during the workshop. The '*Symposium on developing a sustainable future for esports*', was held in November 2019 in Jönköping, Sweden [19]. Two concurrent workshops were hosted at Jönköping University, each with 30 attendees representing both the esports industry and academia [20]. Invited participants were assigned into multiple subgroups of four to five attendees and one facilitator each. Equal opportunity to contribute was facilitated via small group size and inclusive seating arrangements. This design allowed all participants to face one another and direct their ideas and comments to the group rather than the facilitator. Furthermore, it attempted to remove symbolic hierarchies that might be formed, for instance, if one person is sitting at the head of the table.

Participant demographics

In total, there were 64 participants, including four workshop leaders. Although most (52) were based in Sweden, there was diverse international representation with 28 participants who were not of Swedish nationality. Of the participants, 17 were female and 47 male. Ages ranged from approximately 20 to 55 years with the majority aged in their 20s and 30s. The 30 representatives in each workshop were industry representatives and members of academia, many of whom had extensive links to industry and practical experience. The workshops included representatives of international esports stakeholders (e.g., Esports Integrity Commission [ESIC], DreamHack, and The Esports Observer), and Swedish esports organizations (e.g., Female Legends, Swedish Esports Association, Esports United, and Phoenix Blue). In addition, attendees represented esports content creators, entrepreneurs, indie game developers, LAN organizers, student associations, esports coaches, sports clubs, local government, and former professional players. Academic areas of expertise included esports, marketing, entrepreneurship, media, innovation, legitimacy studies, gambling, streaming and content creation, gender studies, game cultures, institutional studies, and globalization.

Data collection

The workshops were structured as follows (see Table 2). First, the facilitators adopted a ‘flexible moderator’ role [21] where participants were given the freedom to interpret sustainability issues as they saw fit and were allowed the autonomy to direct the conversation to where they, as experts in the field, believed it should be directed. Second, the facilitator acted as amanuensis (i.e., note taker) during these discussions. These notes were used to aid facilitation and as raw data for later analysis. Finally, the facilitator also wrote down (or encouraged participants to write down) each idea on post-it notes and placed each on an A2-sized piece of paper in the middle of the table, which served as an interactive mind map. The mind map provided participants with a visual and physical aid to further discuss ideas, suggest modifications/clarifications, and suggest relationships between different post-it notes (for example, by placing them in thematic clusters) [22]. Third, the subgroups presented a summary of their discussions to all workshop participants, ensuring issues could be shared, elaborated upon, and discussed. After each group presented their issues, they were categorized into mutually exclusive, but comprehensively exhaustive themes. Fourth, each subgroup was assigned a theme and allowed time to discuss how this issue could be resolved (using the same approach as in step two). After 20 minutes, the themes were swapped so that each group was able to discuss potential solutions to three themes. Finally, each group presented their solutions to all workshop participants, allowing other groups to discuss, critique, and synthesize each solution as a collective. Participants were also allowed to give broader comments about the workshop and the state of the industry, ask facilitators and peers final questions, and present any final thoughts they had for later reflection.

Table 2: Structure and process of the workshops

Stage	Level of discussion	Facilitators' role	Participants' role
1. Introduction	All workshop participants	Introduce and frame the workshop	Listen and ask questions about format
2. Issue identification	Group	Flexible moderator, note taker, post-it writer	Identify and discuss key sustainability issues affecting esports industry
3. Issue discussion	All workshop participants	Moderate discussion, write ideas on whiteboard, facilitate categorization of ideas into themes	Present, elaborate, and critique issues. Collectively categorize issues into key themes
4. Solution proposals	Group	Flexible moderator, note taker, post-it writer	Propose potential solutions for issues
5. Solution discussion	All workshop participants	Moderate discussion, write ideas on whiteboard, facilitate categorization of ideas into themes	Present, elaborate, and critique solutions. Collectively categorize solutions into key themes
6. Close the workshop	All workshop participants	Thank attendees. Encourage comments around the workshop	Comments about the workshop. Pose questions and final thoughts.

As a result of the workshops, all discussion groups produced mind maps and lists of keywords and topics covered during the discussion. In addition, the facilitator of each group wrote down the group's thoughts and ideas. These lists constituted our primary data. Furthermore, after the workshop, the facilitators were asked to summarize their thoughts on the group discussion in written format, which we also used as data in our analysis. The summaries were collected per email shortly after the workshop.

Data analysis

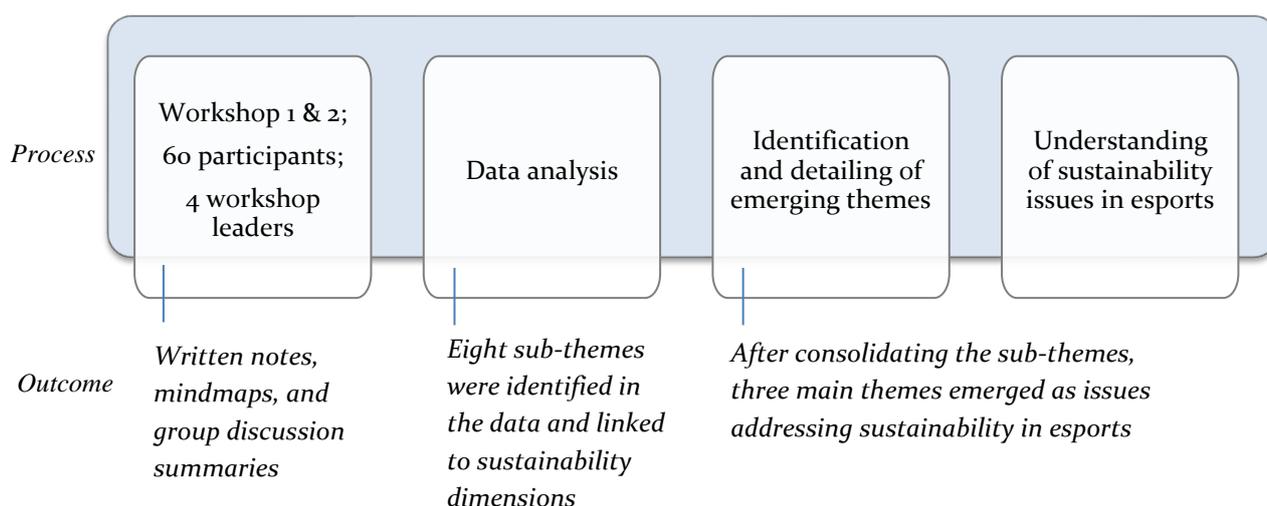
The data were analyzed using thematic analysis [23]; in this phase, the researchers searched for descriptions of sustainability and mapped the different topics that the workshop participants viewed as important for the future of the esports industry. Independent researcher coding was guided by identifying issues, proposed solutions, and the relationships between them (see Table 3).

Table 3. Data analysis process

Data analysis phase	Task	Outcome
1. Open coding	Identify and categorize issues	8 consolidated themes
2. Focused coding, round 1	Identify solutions to the consolidated themes, noting relationships between the themes	Further descriptions of the consolidated themes
3. Focused coding, round 2	Identify sustainability dimension of each consolidated theme	Linking the 8 consolidated themes to sustainability dimensions
4. Analysis of outcomes	Synthesize the coding rounds	3 propositions for addressing sustainability in esports

Care was taken to ensure that minority or dissenting opinions were also considered during coding. We were thus able to identify and categorize areas of research, which the workshop participants viewed as important and/or emerging related to each sustainability orientation (economic, social, environmental). The findings were then discussed as a research team until agreement was made on final themes based upon the data and research question. Figure 1 provides an overview of the study's design and data analysis process.

Figure 1. Research design and data analysis process



Results

The resulting themes from the workshop were categorized into three main topics linked to established sustainability dimensions [9]. Table 4 provides an overview of the main themes addressed in the workshops (columns 1-2) and the consolidated sub-themes based on both workshops (column 3) linked to a primary sustainability dimension (column 4). Finally, Table

4 indicates the final consolidated emerging themes based on sustainability dimensions (column 5). These categories are presented as propositions highlighting those areas of the esports ecosystem in need of further attention if the industry is to achieve sustainability at all levels (economic, social, and environmental). The propositions are: (1) social sustainability in esports requires addressing issues of health and inclusiveness, (2) social and economic sustainability in esports require stable industry structures, increase of legitimacy, and decentralized governance; and (3) economic sustainability in esports requires an evolution of business logic.

Table 4. Emerging main themes based on the workshop data

Business workshop topics	Society workshop topics	Consolidated sub-themes	Primary sustainability dimension	Emerging main themes
Recognition and increased understanding of esports as sports, players' well-being	Lack of definition of sports and esports, hidden agendas in esports, burn-out, disorders	Social and mental health	Social sustainability	Health issues and inclusiveness
Bullying/harassment and toxic environment	Gender equality	Diversity and inclusion	Social sustainability	
Geographical differences and rules in esports	(Organizational) fragmentation	Inconsistent industry standards	Social & Economic sustainability	Incomplete industry structure
Lack of rules and/or inconsistent rules, code of conduct	Lack of knowledge and professionalization	Governance and institutionalization	Social & Economic sustainability	
Unclear in league structures and games (lack of clear paths hinders sensemaking)	Lack of transparency, complexity of industry	Transparency of structures	Social & Economic sustainability	
Lack of service providers, lack of organization and structure, unclear prospects	Risks and unpredictable future	Fragmented ecosystem	Social & Economic sustainability	
The leap from occasional player to professional-lack of support or guidance, and development of skills	Lack of knowledge and professionalization / limited career prospects	Training and education	Economic sustainability	
Monetization issues, revenue hard to come by, financial sustainability, uncertainty, and instability	Commerciality and return on investment	Revenue models	Economic sustainability	

Discussion

Each proposition is now discussed in a dedicated sub-section and presented conjointly with a background review of the consolidated themes linked to the proposition. By broadening the discussion to the extant literature, we holistically approach the emerging sustainability themes in esports.

Social sustainability in esports requires addressing issues of health and inclusiveness

We identified the following sub-themes in the data associated with the social sustainability dimension within esports: social and mental health, and diversity and inclusion.

Social and mental health

The informants identify players' mental health as a significant topic in esports. Many professional players have publicly discussed feeling 'burnt out' at some point in their careers [24]. Many elite professional players must contend with busy competitive seasons, often traveling around the globe over short periods, competing in high-stakes tournaments, and gruelling practice schedules with little downtime. In the coming years, special attention should be directed at the players' practice environment and especially to their life rhythms, the role of the parental and social environment in their development and well-being, as well as the social cohesion of the groups of players with each other, their support staff and with the culture of the country in which they stay. However, players' mental health is not limited solely to cases of burnout; there is also a need to address nutrition education, increased physical and mental stimulation beyond the game, and treating depression and anxiety in players [25]. Nutritionists, dieticians, and mental health professionals are increasingly overseeing the health and development of esports players [26], as has been the norm in traditional sports for decades.

Disorders linked to the social and cultural dimensions of players' health, often teenagers or young adults, constitute a challenge for esports [27]. The separation of families, cultural differences, the challenge of relationships, or the different circadian rhythms due to different time zones, are all elements likely to harm players' well-being (e.g., [28]). Physical injuries are certainly the most visible traumas experienced by players who practice intensively, with many high-level players having publicly mentioned the issue, sometimes even putting their careers on hold, or stopping altogether [29-30]. No genre or game medium is spared and specific approaches to medicine in esports are increasingly required [31]. Research into physical injuries in esports have also identified ongoing issues with many teams now staffing physical trainers, physiotherapists, osteopaths, and occupational therapists [32-33]. Concurrently, physiological monitoring devices will increasingly support these efforts to maintain peak performance [34].

Diversity and inclusion

The informants consider the esports industry as mainly composed of young, white, able-bodied men. While exceptions can be found at the highest level, participant perceptions were that there are few female players, few BIPOC (Black, Indigenous and People of Color) players in the PC esports scene, few players over the age of 30 years, even fewer players with disabilities, and very few transgender or non-binary players. As with any other cultural or sporting activity, esports reflects the societies in which it has emerged and developed. In theory, esports is a unique space of inclusion; the skills required to perform in video games do not discriminate against people based on their gender, skin color, or age. In practice, however, the idea of an inclusive esports ecosystem is not yet a reality.

In addition, the following themes of diversity were identified in the data: gender, racial, generational, and inclusion of people with disabilities. Current estimates state that half of all video game players are women [35]. Yet, they comprise only six percent of the competitive esports scene [36], only four percent of LAN attendees over the last ten years [37], and only a handful have participated in major international competitions or leagues (e.g., Kim “Geguri” Se-Yeon in *Overwatch*, Sasha “Scarlett” Hostyn in *Starcraft II*, or Li “Liooon” Xiaomeng in *Hearthstone*). Reasons for this disparity may include social constructions which favor cooperation over competition in adolescent girls, gendered marketing of video games oriented towards adolescent boys in the 1990s, an absence of playable and non-hypersexualized female characters, and toxicity in online spaces [38-41]. Although it is an aspect of diversity that is sometimes discussed less than gender, there are apparent differences in the representation of Black or Latinx people in esports, depending on the competitive scenes and the games media. As observed from highest overall earnings [42], PC gaming is dominated by white and Asian players. The console-based gaming communities—particularly the fighting game community—appears more diverse [43]. The absence of BIPOC gamers at the highest professional level may be rooted in a lack of support from game publishers for their competitive console scenes (compared to their PC scenes). Toxicity and harassment further compound the situation BIPOC players face in online gaming spaces [44]. Thus, while research on race in esports is developing into a focal area [45], commitment from game publishers, league organizers, and event management is needed to ensure a healthy social environment for marginalized players. Thus far much of the activism in this space has been spearheaded by individual players, although several organizations have emerged, including AnyKey, Black Girl Gamers, Latinx in Gaming, Melanin Gamers, or Afrogameuses, that strive to build racially diverse esports communities [46].

Social and economic sustainability in esports require stable industry structures, increased legitimacy, and decentralized governance

We identified the following themes alluding to both social and economic sustainability: inconsistent industry standards, governance and institutionalization, transparency of structures, and fragmented ecosystem.

Inconsistent industry standards

During the late 2010s, game developers adopted the games as a service paradigm (i.e., Games as a Service [GaaS]) [47]. Consequently, the esports ecosystem moved towards a more market-based environment, with the emergence of specific ecosystems for individual esports titles increasing fragmentation. Concurrently, publishers centralized the competitive tournaments at the highest level; as such, every esports title has an ecosystem both derived from, and supporting, the business model of the video game publisher, creating a lack of uniformity in the regulation and governance of the sector [5].

This market-based focus has initiated several issues that impact the entire esports ecosystem’s social and economic sustainability. Accordingly, the informants in this study point at a lack of industry standards within esports, with those that do exist being inconsistent; the presence of different publishers, different strategies and diverse stakeholders mean the creation of necessary standards, and metrics within the industry is particularly challenging. This situation is further complicated because esports is a worldwide phenomenon, there is pressure on esports organizations to act globally despite being rooted locally and subject to differences in national law and structures [48]. For example, the informants recommended an industry standard for viewership metric (e.g., Average Minute Audience [AMA]) both valuable and necessary. In addition, as industry standards for contracts in esports collide with national

employment laws, it is essential to evaluate where industry standards are required and push for solutions.

Governance and institutionalization

The gatekeepers of esports represent a form of governance regarding their respective games and, if they are professional, have some form of institutionalization. For example, Overwatch, and the Overwatch League, are highly regulated and can rival other governance structures in traditional sports [10]. Despite this structure, there is a call for a governing body on a global level [49] for which a range of bodies are competing; there are currently eight international federations that claim to be the governing body of esports worldwide, including: International eSports Federation (IeSF), International Digital Sports Committee (IDSC), International Esports Committee (IEC), World E-sports Consortium (WESCO), World Esports Association (WESA), Esports World Federation (ESWF), International Esports Omnipotent Committee (IEOC) and the Global E-Sports Federation (GEF). Two of them, the IeSF and GEF stand out, either because of their relative longevity (the IeSF was created in 2008 and covered approximately 100 member countries) or their relative representativeness (some of the largest game publishers in the esports industry are founders and members of the GEF). However, both governing bodies use the same strategies and pursue the same objective: to align with the sporting and Olympic institutions [50]. Yet, neither of these entities has acquired the necessary legitimacy within the esports industry [51]. An underlying question concerns the necessity of such a governing body on the international level if, within a specific game, a publisher possesses this role. The discussion addresses important issues related to the benefits usually associated with legitimacy, particularly, access to resources and organizational success. On the national or federal levels, associations are perhaps better equipped to act as governing bodies due to the legitimacy they are provided with thanks to their direct connection to the region and the grassroots level. But this can only happen if the publisher delegates this role to governing associations.

Transparency of structures

The consequence of the lack of interest from game publishers is the presence of many stakeholders embodying a range of diverse and varied interests who wish to position themselves as parallel regulators of the esports ecosystem [52]. Due to this situation of alternative legitimacy claims (each one advancing their own system of rules, norms, concepts, and definitions, but none of them achieving a generalized consensus around them), ethics and integrity issues in the industry and esports competitions remain significant challenges for industry stakeholders [53]. In the absence of a legitimate international governing body and the powerlessness of the publisher, every individual stakeholder needs to uphold fairness in esports without a generally accepted appropriate system of reference. For instance, match manipulation and match-fixing are serious issues in some competitive arenas [54]. For some players it may be more profitable to lose on purpose and bet on your own defeat than to win the game. If betting platforms cooperate with competition organizers, they can alert them of suspicious transactions. When this is not the case, or when betting occurs in unregulated environments, it becomes almost impossible to fight against this phenomenon. It becomes evident that 'clean' esports requires a combined effort of key stakeholders in the respective ecosystem, thereby highlighting the challenge of creating local solutions that work in specific legal frameworks and global standards enabling a fair competitive environment. Bodies such as ESIC work to identify solutions that may bridge this paradox; to create sustainable solutions, national or federal associations must collaborate to find an efficient solution to this challenge.

Fragmented ecosystem

A corollary effect of this lack of a legitimate common regulating system is that esports is a fragmented ecosystem. The growth of many digital industries, particularly esports, would benefit from regulation and frameworks, not only from a legal and economic point of view, but also to promote its social impact [49]. The fragmentation of the various stakeholders in the esports ecosystem reveals the absence of formal governance of the sector, leading to drifts in terms of ethics and integrity. Often it is grassroots actors that shape the markets of esports [55], consisting of multiple sub-esports ecosystems. These systems may arise from a national perspective or a specific esports title, making esports highly complex. The struggle of creating an international governing body reveals the multilevel complexity of achieving validity in the legitimacy process [56], making esports perhaps ungovernable [5], and requiring new solutions. Indeed, the story of esports is characterized by bottom-up, community-based action; for example, in the absence of action from the publisher, it was the players of Super Smash Bros. themselves that acted as user entrepreneurs to build the competitive scene [57].

Although the primary source of power in any established esports ecosystem lies with the game publisher, a series of alternative structures co-exist; there are tournament organizers and streaming platforms that link the specific esports title with each other on a horizontal level while at the vertical level, national or federal associations help connect the grassroots esports environment with the pro circuit created by the game publisher. Thereby this fragmented ecosystem has specific assemblages in the contexts that allow the consolidation of legitimate systems through mimetic and professionalization processes [58]; embracing this flexibility may contribute to sustainability in contrast to the coercive enforcement of governing bodies copied from traditional sports.

Economic sustainability in esports requires an evolution in business logic

We identified the following themes regarding economic sustainability: training and education, and revenue models.

Training and education

A significant challenge for the sector concerns training of future esports professionals. The themes identified in the current study's data directly related to training the players, staff, and related professions. The process of professionalization within esports started only in the middle of the 2010s. A dematerialized practice by nature, esports has developed during 2000–2010 distinct from any formal framework; although this feature constitutes one of its perceived strengths [5], it may also be a barrier to learning and improving skills necessary for personal development and access to high performance. Respecting instructions, rationalizing training, warming up, taking breaks, learning to lose or win, working within a team, and playing a role within a group are all skills that esports can teach [59–60]. As such, the environments of schools, universities, and clubs constitute a sound basis for promoting healthy and responsible practices of esports [61–62]. By structuring the supervision of esports practice from the youngest age, it is possible to act on several levels: to transmit good practices, to develop competencies, to identify players with solid potential, and thus to favor the sustainability of the professional ecosystem. Training players requires the support of coaches, managers, and analysts who are competent both in the technical specifics of esports practice and experts in their respective fields (e.g., didactics and pedagogy in coaching, psychology and social psychology, physiology, economics, marketing and communication, business development, project management and event management). It is therefore essential to identify the sector's needs in terms of professions, develop appropriate training courses, build relevant educational

content, and identify the appropriate contributors [63]. Such an approach would benefit both the staff who supervise the players (from initiation to high level) and the future professionals who will be active in the sector in the coming years [64]. Numerous training programs, whether at the school or university level, have been developed worldwide, mainly in Western Europe and Scandinavia, North America, and Southeast Asia. They offer different formats, are positioned in various disciplinary fields, and train many professions [65].

Although there are counterexamples in specific esports sectors, notably in the Fighting Games Community, it is typical for a player's career to end around the age of 25 years [66]. One potential explanation for the exhaustion experienced by players is the requirement of high-level competition in a context where the process of professionalization is still in an early phase, often asymmetrical, and extremely limited. Stability in a club is difficult to reach, competition is intense, and few places are available in a sector where being at the lower level is synonymous with financial instability. As with any other athlete, esports players' bodies and minds are the tools of their work, due to the increasing economic, competitive, and media stakes, players can quickly overuse their bodies and could be unable to establish long-term and, subsequently, financially rewarding careers [60].

Revenue models

The esports market has been growing strongly since the 2010s, although the COVID pandemic initiated a slight decline in 2020 [67]. The market is small (barely 1/500th of the sports market) and strongly dependent on private investments [68]. While game publishers and a few pro-players can benefit from important revenues, the current esports business model of clubs and league organizers are seldom profitable [69]. Compared to professional sports, the sources of income are less diversified: media rights are marginal, ticketing is minimal, sports betting is undoubtedly growing but not authorized in all countries, public subsidies are rare, and merchandising is still relatively under-developed [70]. Fundraising, sponsorship, and content creation are currently the three primary sources of income for esports clubs [71]. Concurrently, the flexibility of event organizers is decreasing as game publishers regain control of their intellectual property. Today, almost all esports clubs and event organizers are losing money and are forced to chase investors to ensure their short-term stability for one event or season [70-71]; it is apparent that sustainable business models are yet to be discovered within the esports ecosystem.

Conclusions

We have discovered and discussed emerging themes within esports that explicitly relate to sustainability; the ability of esports to survive or persist is mainly dependent on how well industry stakeholders can address these themes. Firstly, we found that social and mental health as well as diversity and inclusion are vital aspects of ensuring social sustainability. This led to our first proposition, namely *social sustainability in esports requires addressing issues of health and inclusiveness*. Social sustainability is generally considered to encompass more than the physical well-being and basic needs of human beings [72]. For decades, social sustainability has encompassed social homogeneity, fair incomes, and access to goods, services, and employment. To date, esports research has presented a wide range of social issues related to the industry but has not explicitly linked the discussion to social sustainability.

Secondly, our data pointed towards incomplete industry structures characterized by inconsistent industry standards, issues related to governance, institutionalization and transparency of structures, and a fragmented ecosystem. We thus proposed that *social and*

economic sustainability in esports require stable industry structures, increase of legitimacy, and decentralized governance. Social and economic sustainability in esports are closely connected due to the GaaS paradigm; stakeholders aim to enhance the lifecycle of an esports title, which necessitates sustainability. This form of sustainability is focused on the economic dimension, but as esports requires players to play the games, social sustainability is necessary to achieve financial sustainability. Stakeholders must, therefore, establish and nurture an environment in which the longevity of a game can be sustained. Accordingly, social and economic sustainability in esports call for stable industry structures, increased legitimacy, and decentralized governance. Moreover, esports requires a stable and reliable legal framework, at the very least on the national level [73].

Thirdly, immature business logic emerged as the main theme and resulted in our third proposition; *economic sustainability in esports requires an evolution of business logic.* Here, training and education, and revenue models outline the theme, currently pointing towards a plethora of business and revenue models, business logic, and professional roles, rather than established value-creating economically sustainable processes.

We argue and stress that sustainability in esports cannot be merely concerned with securing business growth (i.e., economic sustainability). While there are emerging themes related to economic sustainability (i.e., business models, governance, and institutionalization), social sustainability issues appear to be the current primary concern of most practitioners and researchers of esports. These are specifically related to inclusiveness, social and mental health, integrity, transparency, and foremost standards, governance, institutionalization, and fragmentation in ecosystems.

An issue of note is that there were no clear themes in the data related to environmental sustainability (i.e., the responsible use of natural resources; an example of which would be the utilization of sustainable technologies and energy-saving related to gaming and competitive events). These were not identified by the workshop participants possibly due to their focus being on the structures and processes within esports rather than supporting factors such as technology and, in turn, its impact on the esports industry. Academic work has already seriously underlined the negative impact of digital infrastructures and video games [74-76]. However, little is known about the direct effect of esports on the environment. Given that, in the contemporary world, we argue that it is impossible to ignore the major ecological crisis facing the global population. Esports stakeholders should not ignore this challenge indefinitely; the infinite growth of the sector thus becomes a questionable issue.

Esports represents a future lab for society with opportunities for research in a range of specific disciplines as well as extensive cross-disciplinary studies. Furthermore, esports stakeholders and individual actors have increasingly indicated and demonstrated a willingness to work with researchers to ensure a sustainable future for esports. As esports becomes increasingly pervasive in developing countries [77-78] the value of understanding the role of esports in a global digital society and how a sustainable future can be ensured becomes even more pressing.

While some researchers claim that the concept of sustainability has to a degree lost its meaning [79], and its vagueness may hinder its application in research [80], the traditional sustainability perspective allows for analyzing both the current and the potential future state of an emerging industry. A sustainability perspective points at critical issues that eventually become vital for the industry. A particular asset of esports is that it is neither clearly structured or governed, and that a substantial amount of bottom-up activity and enthusiasm is present in the ecosystem. This provides a viable opportunity to facilitate meaningful change; esports evolved from

grassroot communities, and these communities can play a core role in esports sustainability. Researchers should play an active role in supporting these initiatives.

Declaration of interest statement

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