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IMPLEMENTATION OF AN INNOVATIVE MANAGEMENT SYSTEM FOR TALENT RECRUITMENT WITHIN THE DOMAIN OF PHYSICAL CULTURE AND SPORTS SERVICES IN UKRAINE

Abstract. The paper takes a look at contemporary sports management systems and how they cannot facilitate meetings and connect potential prospect talents with the ideal sports agency. The current condition of physical culture and sports within rural communities in Ukraine leave much to be desired. Many of the talented athletes and kids living in these rural communities are not given the opportunity they deserve to hone their skills in sports and make a career out of their talent. Therefore, sports for them, has only become a leisurely activity and they are expected to let go of it once they reach the age of maturity. The paper goes on to highlight a proposed quality management system of physical culture and sports services that can eliminate this issue using standardization of the quality management. Lack of innovation during the development and deployment of management systems for sports in Ukraine prevents the industry from reaching its full potential. Therefore, it is vital to understand what the public and the sponsors require from a technical system that handles profiles of sports athletes and manages them according to user requirements. The research incorporates a secondary methodology with an emphasis on qualitative analysis. This allows for the researcher to develop a systematic literature review using previous researches already conducted within the same field. Through this methodical, arguments and statements of other researchers can be extracted based on innovation in cultural sports and management systems. This paper aims to highlight a potential model that has a unique and innovative feature of matching a consumer to the nearest sports sponsorship organization in Ukraine. The hypothesis of the study was confirmed, which was the assumption that efforts to improve only the existing practices of organizational activities cannot significantly improve the state of physical culture and sports and the quality of physical culture and sports services to residents. The paper also delves into the benefit of its implementation as well as potential issues that may arise once it is deployed. Lastly, the proposed innovation system must be assessed further by other researchers to gauge its technical implementation and identify pitfalls and issues that may come up during development. If they are identified, they can be eliminated, once the system starts to undergo a proper development process.

Keywords: sport management systems, physical activity, innovation.

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УПРОВАДЖЕННЯ ІННОВАЦІЙНОЇ СИСТЕМИ КЕРУВАННЯ ЗАЛУЧЕННЯМ ТАЛАНТІВ У СФЕРІ ПОСЛУГ ФІЗИЧНОЇ КУЛЬТУРИ ТА СПОРТУ В УКРАЇНІ

Анотація. Розглядаються сучасні системи спортивного менеджменту і те, як вони не можуть полегшити зустрічі та поєднати потенційні перспективні таланти з ідеальним спортивним агентством. Сучасний стан фізичної культури і спорту в сільських населених пунктах України залишає бажати кращого. Багато талановитих спортсменів і дітей, які живуть у сільській місцевості, не мають можливості відточувати свою майстерність у спорті та робити кар'єру на основі свого таланту. Тому спорт для них став лише дозвіллям,

і очікується, що вони залишать його, щойно досягнуть зрілого віку. Запропоновано систему керування якістю фізкультурно-спортивних послуг, яка може усунути цю проблему за допомогою стандартизації керування якістю. Брак інновацій при розробленні та впровадженні систем керування спортом в Україні не дозволяє галузі повністю розкрити свій потенціал. Тому дуже важливо зрозуміти, що громадськість і спонсори вимагають від технічної системи, яка обробляє профілі спортсменів і керує ними відповідно до вимог користувачів. У дослідженні використана вторинна методологія з акцентом на якісний аналіз. Це дозволяє дослідникові розробити систематичний огляд літератури, використовуючи попередні, уже проведені дослідження. Завдяки цьому методіві можна отримати аргументи і підтвердження інших дослідників, засновані на інноваціях у культурних видах спорту та системах керування. Мета роботи — виділити потенційну модель, яка має унікальну інноваційну особливість — пошук споживачем найближчої організації, яка надає спонсорську підтримку спорту в Україні. Підтверджено гіпотезу дослідження, яка полягала у припущенні, що зусилля щодо поліпшення тільки наявних практик організаційної діяльності не можуть суттєво поліпшити стан фізичної культури і спорту та якість фізкультурно-спортивного обслуговування населення. Розглянуто переваги її впровадження, а також потенційні проблеми, що можуть виникнути після її розгортання. Нарешті, запропонована інноваційна система має бути додатково оцінена іншими дослідниками, щоб оцінити її технічну реалізацію та виявити підводне каміння і проблеми, які можуть виникнути у процесі розроблення. Якщо їх буде виявлено, то можна буде усунути, коли система почне проходити належний процес розроблення.

Ключові слова: системи керування спортом, фізична активність, інновації.

Формул: 0; рис.: 1; табл.: 7; бібл.: 25.

Introduction. The current condition of physical culture and sports within rural communities in Ukraine leave much to be desired. Many of the talented athletes and kids living in these rural communities are not given the opportunity they deserve to hone their skills in sports and make a career out of their talent. Therefore, sports for them, has only become a leisurely activity and they are expected to let go of it once they reach the age of maturity. When one looks at the global mass sports industry and how there are so many different consumers who are from different places in the world and yet, have made their name in the industry, one can see the lack of opportunities and unfairness that is on display in Ukraine's rural community and its inhabitants [1].

Many rising sports athletes such as Lebron James and Michael B Jordan come from fairly modest families and they got to where they are solely because of their talent and skills. They were given the opportunity to refine their skill and play on the big stage. There is always a chance for a sports elite to emerge from rural areas yet the rural communities are not given a chance by sports sponsors and sports agencies. The poverty ridden people who live in rural Ukraine therefore have to let go of their passion of sports [2].

Because of this apparent lack of opportunity that is provided to peasants of rural Ukraine, there is a need for innovative management systems that can be used for various purposes, such as for sports, athlete tracking, generating leads for promising athletes as well as allowing the executives and managers to understand the fluctuating realm of sports within Ukraine. A part of the system must also be available to the public of a specific group of people who can connect to the system and make their presence known. Denysova et al. (2018) state that several systems holding these functionalities are available [3]. These include the Blackboard system that was developed by the company of the same name. The software acts as a web-based platform and makes use of a scalable framework to incorporate profiles of stiffens and athletes and makes them available to various organizations. Furthermore, it provides public user access to sporting courses, therefore, allowing the user to partake in educational actives to enhance their sporting skills. Yet another system that is not exclusive to physical culture and sports is the Modular Object-Oriented Dynamic Learning Environment (Moodle). Moodle is a pure learning platform that allows teachers, students, and administrators to gather on one system to achieve personalized learning. This is done by providing different levels of access and privileges depending on the user. A teacher can set classes,

take attendance and upload learning materials, while a student can check their class schedule, and upload their homework. These types of unique and beneficial systems enhance the aspect of learning which is why a modified version of such a system can be applied within the domain of learning sports and physical activities too [4].

Vasyukova et al. (2016) mention that introducing innovation in sporting activities and their respective management systems can prove to be beneficial to the overall economy. The research delves into how these management systems allow for finding more promising young athletes who can further be trained. At the same time, these systems can provide training materials to citizens, and help them learn about the physical culture and various activities and rules involved in a sport. This leads to more people going this route and joining national competitions. Their contributions then have a positive impact on the economy [5].

The issue is the lack of development and opportunity of quality management sports systems especially within the rural communities located in Ukraine. The lack of visibility there is very much a problem as hardly anyone pays attention to rising athletes from those areas. The *Table 1* below highlight the lack of opportunities granted within rural communities through use of statistics gained by searching secondary researches.

Table 1

Financial Funds for Sports Development		
Financial funds raised and used for the development of sports		
1.	Funds of the community itself, allocated and mastered for the development of sports	7%
2.	Funds raised from other sources and mastered for the development of sports	12%
3.	Money spent to conduct competitions in the regions	4% of GDP

Note: Compiled from analysis of sources [6—8].

The *Table 2* below provides a score out of 100, highlighting the current conditions for sports development for young athletes within the rural sectors of Ukraine.

Table 2

Current conditions of the regional competitions within Ukraine		
Favorable material and technical conditions for the development of sports		
1.	Swimming pools	25/100
2.	Sports complexes with an area of 2784 and more ²	20/100
3.	Sports complexes with an area of up to 2784 m ²	33/100
4.	Stadiums with athletic tracks with synthetic coating and football field, as well as spectator seats	43/100
5.	Sports halls with an area of 450 m ² or more with auxiliary rooms	16/100
6.	Football fields of standard size with seats for spectators	24/100
7.	Gyms up to 450 m ² with auxiliary rooms	12/100
8.	Sports grounds (mini-football fields, tennis courts, basketball and volleyball courts) with synthetic coating	14/100

Note: compiled from analysis of sources [9; 10].

Table 3 complements the current status for organizational interest within Sports by highlighting the actions that are often taken by external companies, within the sports sector. The numbers are quite low for rural communities.

Table 3

Organizations showcasing interest within Sports Development in Ukraine		
Organizational measures for the development of sports		
1.	Availability of a targeted comprehensive program for the development of sports for 2021—2023.	35/100
2.	Creation of the State University and ensuring the conditions for its work	66/100
3.	Creation of a sports club and ensuring the conditions for its work	52/100

Note: compiled from analysis of sources [11].

The *Table 4* below showcases the opportunities that young individuals can get within Ukraine due to being talented at sports and the facilitates and Personnel that are available to help them.

Table 4

Opportunities and Sports Personnel

Provision of sports personnel		
1.	Number of instructors in physical culture and sports (trainers) with special education, introduced into the staffing of village and town councils.	33/100
2.	The number of residents who entered educational institutions (universities and colleges) based on specialties within “Physical Culture and Sports”	44/100

Note: compiled from analysis of sources [12].

Based on *Tables 1–4*, it can be seen that the community is in dire need for some innovative management systems to increase their points on the board. The concept of innovation is described by Zeebaree et al. (2020) as anything that is unique and new and has never been seen before within that domain. Many fields and industry leaders have implemented innovative features in their systems making them more efficient and faster and reliable [13]. The same needs to be done for systems that contributor to the management of sports. There is a considerable lack of innovation within the management systems of sports in Ukraine. While the systems themselves are present such as Active Network, GoalLine, and Omnify within Ukraine, they’re developed for a specific purpose and do not incorporate any innovative features that can revolutionize the landscape of the sporting management systems and the sporting industry. Because little progress has been made to innovate the management systems in use within the sports industry, there is a certain degree of stagnancy in the processes that are commonly made use of. One such process is the talent recruitment system. Wareham et al. (2019) note that the talent recruitment system is a quarterly process where sports agencies, recruitment companies, sponsors, and other entities looking for talented athletes to sign up. Once they are selected, they are trained in their preferred sport, and once successful, they get the ability to join national sports teams [14]. However, the issue lies within the context of connecting the potential up-and-coming sports star with the right talent agency who can enhance their talents and give them the opportunity they need to get on the big stage.

Problem statement. Lack of innovation during the development and deployment of management systems for sports in Ukraine prevents the industry from reaching its full potential. Therefore, it is vital to understand what the public and the sponsors require from a technical system that handles profiles of sports athletes and manages them according to user requirements. This paper aims to highlight a potential model that has a unique and innovative feature of matching a consumer to the nearest sports sponsorship organization in Ukraine. The innovation lies in facilitating meetings between an athlete and a sponsor through a far more effective and efficient method as compared to manual work and effort put in by organizations just receiving athlete profiles and sorting through them. The implementation of such a feature within a sports management system has the potential to streamline the recruitment and hiring processes that take place internally within the sports community, agencies, and by independent recruiters.

Methods. The research incorporates a secondary methodology with an emphasis on qualitative analysis. This allows for the researcher to develop a systematic literature review using previous researches already conducted within the same field. Through this methodical, arguments and statements of other researchers can be extracted based on innovation in cultural sports and management systems. The *Table 5* below provides a summary of the process within select key steps.

Table 5

Literature Review Analysis Procedure (Adapted from Tranfield et al., 2003)

Steps	Processes
Step 1: Data Identification and Isolation	Identification of Keyword Identification of Data Source Selection of Research Papers
Step 2: Extracting the Data	Qualitative evaluation Data extraction and synthesis
Step 3: Analyzing the data	Literature Analysis Extracting and reporting on findings Evaluating the potential for future research

Note: compiled from analysis of sources [15].

Multiple data banks and repositories were used to extract the data. These included the JSTOR database, Google Scholar and EBSCO Library database. Generic keywords were used to extract research papers from these repositories. The reason for using generic keywords was to increase the output of the paper count. Combinations of keywords were also made use of such as «Management», «Systems», «Sports» and «Physical Culture». The table below provides a summary of the keyword combinations (*Table 6*).

Table 6

Keywords	
Domain	Keyword Formation
Innovation of Management Systems in Sports	Sports Management Systems, Innovation Systems, Physical Culture, and innovation. Physical Activity Management system

Making use of three different databases also ensures that the extracted research papers would not be obsolete. The *Table 7* below showcases the individual research paper count along with showing the paper count that was eliminated after the application of the exclusion and inclusion criteria. The total count of research papers analyzed comes to 23.

The utilization of three different database repositories ensured that the data extracted would not be outdated.

Table 7

Research Paper Review Count				
Number of Papers				
EBSCO	JSTOR Database	Google Scholar	Exclusions	Final Research Paper count
10	8	8	3	23

Various inclusion and exclusion criteria were utilized to streamline the filtration of papers relevant to the topic. These criteria were developed independently by the researcher thereby allowing them to reduce the research scope while at the same time receiving researches papers that are highly relevant to the management and innovation of sports systems. The criteria included restrictions such as the paper must not be older than 8 years. Furthermore, the authors must have published more than one research within the domain establishing their authenticity and expertise in the domain. Furthermore, the researches should be open access where the researcher can get access to the full text and they need to be in the English language. The exclusion criteria allowed for discarding any article that was in a foreign language other than English. Furthermore, articles that had wide scopes or vague and generalized content were also discarded. Lastly, blogs, conference papers, and webs site reviews were not considered.

The data analysis procedure was conducted by using a qualitative evaluation of data. The purpose of the qualitative evaluation was to isolate and divide the current features that are present in sports management systems and evaluate the feasibility aspects of incorporation innovation at a cost-effective range. The solution that was discovered was formed after the analysis of various technologies, variables, and rhemes. The innovation that will be delved upon in the next section, expands how technology can enhance an already existent sports management system and enable it to work more efficiently and generate better results. This analysis method is perfect for researchers who want to come up with new theoretical solutions to how innovation can be applied within the sports mazement system domain given the current restraints.

Royal (2018) notes that the criticality and value of researching using ethical means are vital to improving the credibility of the overall research [16]. This is why various ethical criteria were incorporated within this research as well. The quotes and references were checked multiple times to assess their reliability and validity. Furthermore, data from all untrusted sources were eliminated which ensured that the only data used in the research came from credible sources. Lastly, the sources were properly credited to their original authors.

Findings. A perfect quality management system has the potential to improve the process of making sure that people from rural communities in Ukraine can be connected to sports sponsors and agencies. The impact of this physical activity ad sprots management system would be that more athletes can recruited from rural Ukraine and as a result the economy and financial conditions of rural areas will increase drastically. With such a management system, the athletes will get the chance to prove themselves and improve their craft to the point where it could be taken to the national stages. This correction approach conduct requires a management system that can fulfill this requirement which is currently not present. This gap needs to be filled.

With the advent of technology and routine processes being automated, it only makes sense that an innovative system that uses artificial intelligence and automation can revamp the management systems of sports and physical culture. The current global trend is the adoption of fast-paced software and technology to achieve goals while spending as little on manual processes as possible [17]. Therefore, the innovative system that is proposed in the next section utilizes these technologies as well as delves into the feasibility and impact of this innovation from a wider perspective.

The problem as Hextrum (2018) describes is that despite the pool of talented athletes and their data recorded in various systems, they are not able to properly connect with the sponsors, the club managers, and other influential personnel within the sports industry [18]. The lack of opportunities, as a result, is slowly hindering the sports industry where there is a scarcity of talented athletes because many are not able to get any exposure to showcase their talents and get recruited. The innovation is implemented in this particular field to offset the scales and increase the visibility and exposure of athletes for recruiters.

Proposed Innovation. The following is the proposed framework (Fig.).

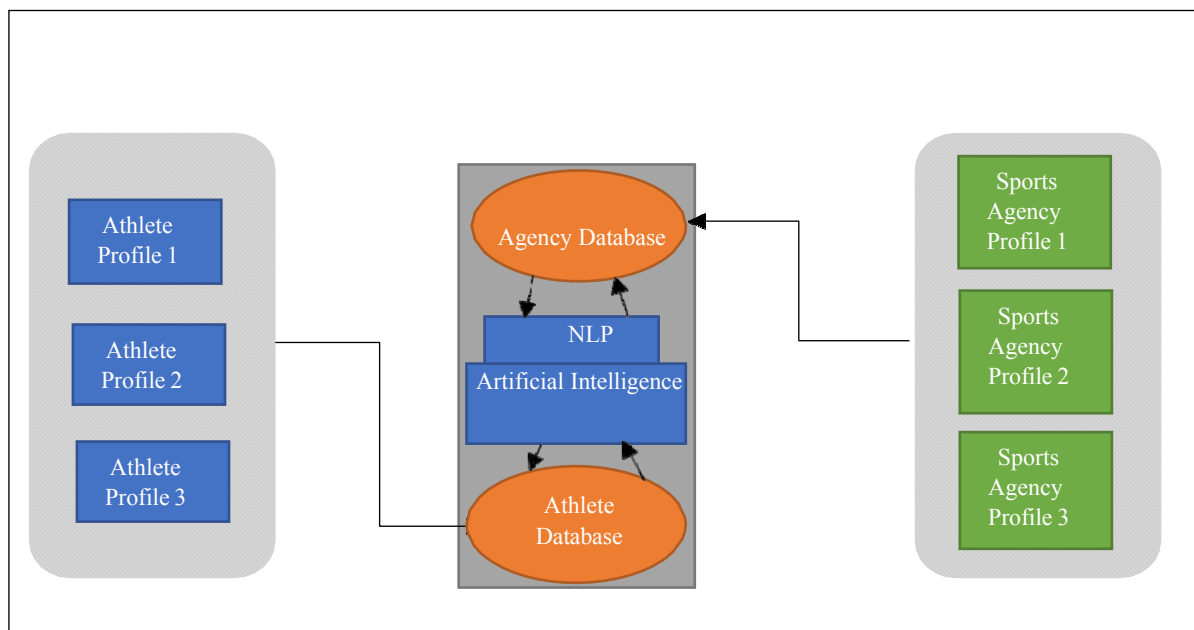


Fig. Proposed Innovation in Sports Management Systems for rural Ukraine

The diagram above showcases a skeleton framework of the proposed innovation that can potentially solve the visibility and exposure issues that many athletes face in the recruitment search. It is noted that sponsors and directorial boards also face the same problem despite sports management systems’ ability to track and record data of numerous potential star athletes. The infrastructure of ecology while providing a viable gateway for seamless communication and visibility between the two estranged parties can be seen as a unique innovation [19]. This is because a system framework like this does not exist currently and is purely a theoretical model that is developed after a comprehensive analysis of the contemporary literature.

Stepanova et al. (2018) mention the need for an automated feature that can help facilitate connections between two parties [20]. While the context of this research is not particularly cemented within the sports industry, the idea is quite similar to the system that is proposed in the diagram above which used an automated feature to connect two entities within the sports management industry to meet and develop a connection. Therefore, the main highlight of this, is that the system aims to connect talented athletes and sports stars with talent agencies. The profiles and information are kept in the athlete database. This database holds comprehensive information on each individual. This includes their specialty, their location, their names, age, and how long they have been active within the sports scene. Entries can be made by anyone as the system is available to the public on one end. Athletes can register their information which gets stored in the database. The other end of the innovation is the cluster of talent agencies, sponsors, recruiters, and all manner of corporate and individual entities willing to work with sports stars. The innovation aims to connect ideal candidates with their desired agencies and vice versa. Essentially the innovation can be seen as a matching system that facilitates meetings between the two parties to create and foster a long-lasting relationship. This eliminates the overhead employed by sports agencies to manually search for talented citizens and future sports stars.

The system makes use of a complicated automation program to match the two entities together. Whenever a sponsor or an athlete signs up, they provide details of what they are looking for and what kind of contact they want to connect with. The keywords they use to create their profile are then passed through a natural language processing program (NLP) to assess the words and their combination. The words are broken down into alphabets and their «weight» and «impact» are gauged for the system's artificial intelligence to understand.

The artificial intelligence that is being used at the backend stores the profiles along with their selected keywords in a unique array within the system's memory. After storing both the candidate profiles as well as the agency information, it then attempts to match the words of the sponsor with the profile of each candidate thereby creating potential matches. Once a match has been made, an alert is sent to the candidate as well as the agency alerting them of the match and asking them to set an appointment time for the meeting. Matches can also be rejected based on specific specifications of the profiles and information provided by those who sign up. Alternative the agencies and candidates can themselves refuse a meeting that the system sets up for them. This provides a certain degree of feasibility where the system is not attempting to force candidates to sign up with sports agencies and bodies rather it is simply creating and managing a prospect meeting.

This innovation increases the speed and efficiency of the talent recruitment processes as Popescu (2017) notes that one of the key aspects missing in contemporary sports management systems such as Play On, Power up, and Rhinofit is the ability to bring in new talents [21]. Current systems are only used for managing and handling and processing existing athletes and are not compatible with the ability to recruit new ones which creates significant problems during the recruitment process. This lack of functionality can be eliminated by the proposed innovation above. The scope of the innovation can either be local or global depending on the time taken to develop it. Filters can be applied by sponsors and sports athletes for what kind of meeting they are looking for and what type of agency or candidate they want. These filters can include anywhere from an agency's success rate to recruitment rate, their sports expertise among others. Similarly, the filters for the candidate include age, years they have been active, any cocreational under their belt among others.

To make an accurate match the innovation requires as much information for the sign-up entity as possible. The more information there is to process, the higher the chance for the system to create a positive match.

Benefits of the proposed sports management innovation. There are various benefits of the proposed innovation. The first of which is it eliminates the need for sports agencies in Ukraine to spend money and effort to manually search for talented athletes to recruit. There are specific recruitment agencies that also provide these services but their work is manual and they charge a

hefty sum of money to find any sports agency their required talent [22]. By making use of a public nonnative system like the one proposed in the paper, the need to go to these recruitment agencies is removed thereby saving on cost and time.

The second benefit is the feasibility and ease of use. Since the innovative change is designed to be user-friendly, any individual can easily use it. It does not require a technically talented person to operate the system. Therefore, its accessibility is a huge benefit especially for people living in rural areas in Ukraine. They will receive the same opportunities of matching athletes with sports agencies as anyone else using the system. Jin (2019) highlights the need for a public system to be user-friendly, as the public incorporates a very wide user base. Some of them might be technically proficient but some are not [23]. Therefore, any system must be easy to handle and use with appropriate visual and graphical icons available to lead the user down the correct way of using the system features.

Furthermore, the innovative system is not limited to any specific sport or any specific geographical location. Therefore, it is compatible with holding data of athletes and agencies that are based in different countries not just Ukraine. It can also be used in multiple countries due to the functionality it provides. This is a requirement that would be kept in mind during the development phase as sports systems are not limited to one country. Sports and physical activities take place all across the globe therefore the management system needs to be able to accommodate this feature.

Lastly, the system is developed created in such a way that it can easily be upgraded whenever needed. More areas can be added after the deployment through routine updates, and more candidate profiles can be added. The users of the system will be able to utilize a subscription-based package where they will not need to purchase the system individually, rather they would just have to pay a small fee after set intervals to continue benefiting from the innovations. With these benefits, the innovative change is sure to revamp the sports management industry and provide them with a massive boost of new clientele and business.

New features can be added based on the recommendations made by the overall community and user demands.

Issues in Implementation. The proposed innovation however can run into several problems upon its implementation. It can be observed that many users show reluctance in adopting a new system especially when they are used to current existing systems. As a result, new sports agencies might not even give the new system a chance [24]. The adoption of the system can be seen as a potential issue that can only be resolved if the innovative change it brings to the table is advertised properly. Furthermore, the system's need to receive routine updates by developers might also prove to be difficult if the system is to be made global. Incorporating every country's unique geographical challenge, the training opportunities that each country provides to its sports athletes can be a very difficult and daunting milestone that would continue to be a work in progress long after the system is deployed.

There are additional issues that can also be foreseen, such as the rapid change in technology that may make the system incompatible with new updates and features. The stack of each system as Murali et al. (2019) state is highly dependent on the initial technology that is selected for the system's development. If at any time it may become obsolete then the system will be useless to the sports industry and culture service teams [25]. There is also the case of unique and individualistic demands and requirements that can come from different sports agencies. Each sponsor or sports entity functions in a different way and they all have the unique methods that they would want the system to incorporate. Unfortunately, that type of accommodation is impossible to fulfill, which might lead many sports agencies to abandon the system or not use it in the first place.

Conclusion. The concept of innovation is certainly novel, especially in a domain where management systems have remained the same throughout the years such as the sports industry. Therefore, to introduce innovation in such a field requires one to take the foundation of sports and what facilitates it and enhance it exponentially. The fact remains, that if talented athletes are not signed up by sponsors, recruitment, and talent agencies, they will not be able to compete at a professional level. Therefore, the biggest issue within the industry is the lack of visibility and

transparency between the individual talented athlete and the sports agency that can recruit him and enable him to play on a national level.

The innovative system proposed in this paper offsets this issue and eliminates the veil that restricts the interaction between the athlete and the perfect sports agency for them. With the deployment of the innovative system, companies and entities can easily find their preferred athlete and schedule a meeting with them to offer them contracts for signing up with them. The difficult process of connecting the two has been simplified using artificial intelligence and natural language processing. It is important to note however that the proposed innovation is still very much in a theoretical phase. Problems can emerge when a practical development and deployment cycle begins which might result in many of the initial system features changing shape.

The use of standards, which have been developed on the basis of international standards ISO 9000 series, should be aimed both at improving the management of those organizations that provide physical culture and sports services, and at improving the quality of these services. This impacts both state and public organizations, especially the company «Kolos», which extends its activities to all regions and rural areas in Ukraine. At the same time, the application of standards to the management system should be provided from the central office of the organization to the activities in the communities.

The regional standard for «Implementation of an Innovative Management System for Talent Recruitment within the domain of Physical Culture and Sports Services in Ukraine» was created on the basis of the ISO 9000 series of international standards. 9000 in the field of sports.

The hypothesis of the study was confirmed, which was the assumption that efforts to improve only the existing practices of organizational activities cannot significantly improve the state of physical culture and sports and the quality of physical culture and sports services to residents. Substantiation, development and use of quality standards for the management system of physical culture and sports in the region will not only attract the attention of community leaders to the development of sports, but also modernize the material and sports base, organizational and personnel work, innovative forms of sports.

Recommendations. With the conclusion of the research, various recommendations can be made. Firstly, the research utilized a pure secondary method. The lack of a primary experiment or survey would have impacted the accuracy and reliability of the research.

Therefore, it is highly recommended for future researchers to use this research work as a basis for their research into sports management systems, and develop proper experimentation protocols to refine the research work within this domain. Secondly, since the research delved into the theoretical proposal of a system's implementation, it would have lent credibility to the research especially if sports agencies were contacted for their input and opinion on how they use management systems and what innovative change they would like to see within the industry. However, due to lack of time and resources, that aspect could not be incorporated into this research which is an oversight that must be filled by future researchers.

Lastly, the proposed innovation system must be assessed further by other researchers to gauge its technical implementation and identify pitfalls and issues that may come up during development. If they are identified, they can be eliminated, once the system starts to undergo a proper development process.

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