

Academic entrepreneurship assessment model in Iranian sport science faculties

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ABSTRACT

Sports science faculties need to incorporate various activities that have not previously existed in their traditional functions to become innovative and entrepreneurial. For this reason, an effective model should be designed and developed to evaluate the facilitation of entrepreneurial research, the independence of faculties, the development of their relationships, and the application of sports science. Therefore, due to the importance of this issue, the purpose of this research was to design a model for evaluating academic entrepreneurship in sport science faculties of Iran. Using snowball sampling and based on the theoretical adequacy of the research, 13 participants were interviewed. The grounded theory was used to analyze the categories and indicators affecting the academic entrepreneurship assessment process. Charmaz's Grounded Theory approach was used to analyze data. The findings include four categories of requirements, enablers, activities, and consequences, for which 19 sub-categories were identified. The results can be used to evaluate, rank, and compare the entrepreneurial activities of academic actors, managers, and majors in sports science, as well as allocated grants and credits to units associated with academic entrepreneurship and commercialization.

KEYWORDS

Entrepreneurship; Commercialization; Faculty; Sport Science

1. INTRODUCTION

Universities perform essential roles in creating and transmitting new knowledge within contemporary societies (Calvo et al., 2019). Academic entrepreneurship has started to be considered a third mission in which university institutions engage, in addition to the traditional mandates of teaching and research. To encourage entrepreneurship among academics and students, universities are now developing entrepreneurship policies and implementing these initiatives to embed entrepreneurial thinking and practices within teaching, research and administration (Etzkowitz, 2004). Effective participation in entrepreneurship development as the mission of the university in the realization of a knowledge-based society is important from two aspects: first, the internal aspect and evolving functions, components, structure, relationships, and processes of the university in order to provide the educational environment and Entrepreneurial development, and the second; external aspect, are the outcomes and achievements that the university brings to the development of entrepreneurship at the community level, and are mutually reinforcing or influencing peripheral forces and systems in the field of economics and knowledge-based development, innovation and entrepreneurship (Audretsch, 2014; Muscio & Ramaciotti, 2019). Therefore, it is expected that the faculties of sports science will participate in Entrepreneurship development to pursue its mission of realizing a knowledge-based society and achieving a sustainable competitive advantage, and by doing so to provide the essentials of internal transformation and achieve remarkable results and achievements. Table 1 illustrates the comparison between traditional universities and entrepreneurial universities as delineated by Etzkowitz (2004).

Table 1. Traditional universities versus entrepreneurial universities (Etzkowitz, 2004)

	Traditional universities	Entrepreneurial universities
Structure	<ul style="list-style-type: none"> • Department, Laboratory, Research center 	<ul style="list-style-type: none"> • Department, Laboratory, Research center • TTO, Incubator, Spinoff
Goal	<ul style="list-style-type: none"> • Knowledge creation 	<ul style="list-style-type: none"> • Knowledge creation • Knowledge utilization
Action	<ul style="list-style-type: none"> • Academic routines • (Teaching, Research publication and Public service) 	<ul style="list-style-type: none"> • Academic routines • Research commercialization

Different approaches have already been proposed for the role of universities in the process of entrepreneurship development. One of these well-known approaches that have been emphasized and used in most researches (Monds Alizadeh et al., 2015; Azimi Delarestaghi et al., 2016; Goudarzi et al., 2016), is training sport entrepreneurship to the target groups, whether students or other members of society and to equip them with entrepreneurial knowledge, insight, and skills. Indeed, this approach reflects the university's contribution to entrepreneurship development by preparing individuals for entrepreneurship and assumes that graduates who have studied entrepreneurship are superior to other individuals in the field of Entrepreneurship and will work more successfully (Muscio & Ramaciotti, 2019). Another approach is the direct role of the university in entrepreneurship development, through the commercialization of knowledge and technology by facilitating the launch of new venture businesses. In light of this approach, the university acts as the treasury or the platform for entrepreneurship (Rasmussen & Sørheim, 2006). On the basis of the first approach, the entrepreneurial achievement is achieved through the entrepreneurship of graduates, while the second, the university is constantly witnessing its entrepreneurial achievements.

Doing the research and producing knowledge in various sciences, including sports sciences, is not the sole cause of wealth creation; rather the integration of knowledge and the effective use of science and technology is caused to create wealth and economic growth (Bengtsson, 2017). In fact, as long as research results are not converted into real products and are not used in the sports industry, there will be virtually no benefit to sports research for academia or society (Pane, Kumar & Yusoff, 2015). Meantime, sports science faculties can improve the transfer of knowledge to the business sector and generate wealth for the country; nurture many entrepreneurs (Goudarzi et al., 2016) or enable sports entrepreneurial businesses to produce their innovative products before competitors in the current market. In fact, universities, industry, and government, each with their goals, policies, and functions can enhance the value of sport through scientific research in the chain of science, technology, product development, and commercialization (Pane, Kumar & Yusoff, 2015).

In many developing countries such as Iran, the sports industry is evolving and this movement can provide a good basis for entrepreneurial activities in sport (Nasirzadeh et al., 2018). Sport affects other industries, including education and tourism, with a full focus on innovation and social entrepreneurship (Oloyede and Tosin, 2017). Therefore, Knowledge and innovation in sport sciences are of great importance for the development of sport as it will improve the performance of athletes, promote community health and economic growth in the country (Kos et al., 2018). At present, there is a great potential and interest to advance research in the field of sports science and technology and

emphasizes the need for focused research and appropriate development for emerging innovations (Nasirzadeh et al., 2018; Ratten, 2010). Increasing awareness of sports science and its benefits enhances the educational system in universities and add to the research and development of new knowledge in sports science and technology. Although sport is considered one of the top industries and at par with other industries, sports researchers at universities are striving to promote sport as a "social and effective institution in different sectors of society" and to promote cooperation between the university and sports industry. (Zaharia, 2017; Azimi Delarestaghi et al., 2016). This means that in order to be innovative and entrepreneurial, universities need to incorporate various activities that were not already in the scope of activities (Peris-Ortiz et al., 2017).

Sport entrepreneurship empowers academic actors to identify opportunities and benefit from creativity, but to date, such programs have not been implemented in Iranian sports sciences faculties. (Azimi Delarestaghi et al., 2016), And the structure of universities and the sport system is such that their interaction is not realistic and appropriate and the context of collaboration is not conducive to applying the knowledge produced in sports science faculties. (Dastoom et al., 2013). To this end, academic activists need to pay close attention to business goals, along with scientific goals, and establish a balanced alignment between the two. Hence, the policy of promoting applied research and recognizing and developing the awareness of the challenges ahead is an important step in disseminating, implementing and making sports science research more relevant (Halperin et al., 2018). Furthermore, to commercialize sport researches, the relationship between industry, organizations and sports science faculties should be spread and academic research should be done based on the needs of these organizations. Also some conditions should be provided in sports science faculties in order to add research commercialization to their culture (Keshavarz et al., 2018).

In recent years, there has been a great effort towards drifting researchers to perform research in this regard, but there isn't much research on academic entrepreneurship in sport. With regard to the mentioned descriptions and considering the issue that the problem investigated in this research is not simultaneously studied in any other and the necessity of its investigation in a new field such as sport, as new aspects of research, it has been like a motive towards selecting this subject for research. Therefore, due to the importance of this issue, the purpose of this research is to design a model for evaluating academic entrepreneurship in sport science faculties of Iran. Considering many benefits that sport sciences faculties can have by creating an entrepreneurial technology and the effects of its commercialization on economic and social processes, the main research question is, how is the assessment model of academic entrepreneurship in sports science faculties?

2. METHODS

The present study was exploratory in terms of orientation and applied in terms of purpose. The type of qualitative research and its applied strategy is a grounded theory with a constructivist approach (Charmaz, 2006). The data of this study was collected based on in-depth interviews with 13 active experts in entrepreneurship management in Iranian sport. Table 2 shows the demographic characteristics of the participants. We tried to choose individuals from sport sciences faculties and its affiliated technological institutes in Tehran. Entrepreneurial activities for the individuals were from the academic entrepreneurial types, presentation of entrepreneurial researches, and entrepreneurial education in the field of sport sciences. The criteria used for choosing these individuals were as follows:

- Founder or the owner of the idea for sport knowledge-based institution (academic entrepreneurship)
- Individuals with more than five patents and intellectual property ownership of sport
- Instructors of sport entrepreneurial workshops and seminars and faculty members with more than one year of experience.

Table 2. Demographic characteristics of the interviewees

Row	Code	Gender	Experience	Education	Occupation
1	P1	Male	8	Master of Physical Education	Startup founder
2	P2	Male	19	Ph.D. in Sport Physiology	Associate Professor
3	P3	Female	13	Ph.D. in Sport Management	Associate Professor
4	P4	Male	18	Ph.D. in Biomedical Engineering	University Lecturer & Co-founder
5	P5	Male	8	Master of Sports Engineering	Startup founder
6	P6	Male	22	Ph.D. in Sport Management	Associate Professor
7	P7	Male	14	Ph.D. in Motor Behavior	Assistant Professor
8	P8	Female	18	Ph.D. in Sport Management	Assistant Professor
9	P9	Male	6	Ph.D. in Sport Biomechanics	Startup founder
10	P10	Female	11	Ph.D. in Information Technology	Co-founder & Executive Manager
11	P11	Male	11	Ph.D. in Sport Biomechanics	Assistant Professor
12	P12	Male	7	Master of IT Management	Startup founder
13	P13	Male	12	Master of Entrepreneurship	University Lecturer & Co-founder

These participants were identified by purposeful sampling using a snowball technique based on goals set and identified and selected based on initial findings by the researchers. Thus, the researchers first selected the first group for the interview and then, interviewees in the first group suggested the next expert groups to complete the interview process. Interviews continued until analysis and discovery reached theoretical saturation (Corbin & Strauss, 2015).

In the present study, knowledge about the process of academic entrepreneurship in the faculties of sports science is subjective and quantitative measurement tools have not been used to achieve it (Creswell, 2014). According to Creswell and Creswell (2017), the application of the grounded theory method is appropriate if there is no theory to explain the process in question. Based on this, a set of conditions has led the present study to use the grounded theory approach.

This theory allows researchers in various fields to formulate appropriate "here" and "now" theories instead of relying on existing theories. Charmaz (2006) method was used to analyze this research. The main strategy for data collection is in-depth semi-structured interviews. Semi-structured interview selection was because, in addition to exchanges of views, discussion of the topic can be guided to achieve research goals. During the interview process, it is possible to observe the emotions and reach the interviewee's beliefs about the research topic.

Table 3. The main questions that were examined in the interview process

Questions	Sub-question
Q1	What factors contribute to the development of academic entrepreneurship in sports science?
Q2	What are the capabilities of the faculties of sports science?
Q3	What do you know about the necessity of applying sport innovation and technology and the implications of applying sport science research?

The recorded files were implemented after the interviews. Prior to the next interview, the initial coding and analysis of the interviews were done with the help of interpretive notes. This procedure was sometimes followed by subsequent interviews up to the initial modeling stage and then coding revisions were performed. In the constructivist analysis of this study, four overlapping processes of primary coding, centralized coding, axial coding, and theoretical coding were used. The process of data collection and analysis was performed simultaneously with multiple revisions (Charmaz, 2006).

2.1. Data Setup

The coding of the interviews forms the basis of the present study's analysis. The researchers identified, by coding, what was happening in the data and attempted to "wrestle with their preconceptions". In this study, the coding was performed in three steps according to the constructivist process (Charmaz, 2006): 1) The naming steps of each word, each line and each piece of data, and then; 2) Centralized coding; 3) Theoretical coding.

Careful attention to coding shaped the subsequent efforts of the researchers to identify actions, meanings, feelings, stories, and silences from the participant's perspective. Primary coding attempted to identify, name, and classify the basic ideas of what the research participants considered to be problematic. Executing precise processes, along with line-by-line coding details, helped open the text and interpret the manuscripts. The next step (centralized coding) is much more abstract than the initial coding. Centralized coding was used for several lines or paragraphs in the manuscripts where the most important or most repeated primary data was used. At this stage, the researcher aimed to adequately aggregate the data, decide on the initial codes, and make the analysis of the data categorized meaningfully and comprehensively. Finally, the researcher attempts to reflect on the categories, sub-categories, and linkages between them to make sense of the interview data, the way it combines subjectivity and objectivity, and the axial coding (Strauss & Corbin, 1998) and theoretical coding (Glaser, 1978), interpreted the data (Creswell, 2014). The process of coding and adjusting the data in this study is as follows:

2.1.1. Open/Primary coding

At this stage, the full transcript of the interviews was transcribed from audio files to the line. Then, by analyzing the text of interviews and interpretive notes, significant and important evidence was extracted for the purpose of the study. Conceptual labels were placed on most lines of text, and the researcher created a list of important themes for the interviewee.

2.1.2. Focused coding

This step is much more abstract, and coding was used for several lines or paragraphs in the manuscript. Therefore, the researchers chose the most frequently repeated codes to represent the interviewee's voice. This step helps to verify the adequacy of the basic concepts developed. In this section, the encodings and categories were combined and the content of each was put into a centralized code format.

2.1.3. Theoretical/Axial coding

Charmaz (2006) explains that axial coding is the reordering of data that is broken down into separate codes through line-by-line coding. In fact, the most abstract level of coding is the theoretical coding that describes the relationships between the categories created. At this point, actual (open) codes were conceptualized by generating hypotheses to be integrated into a theory. Concept integration was a flexible activity that was able to provide overall images and new perspectives. Although the theoretical codes are flexible, their basis was data and could not be mere abstractions.

Thus, theoretical codes, just like the original (open) codes, were constructed from the process of continuous data comparisons in field and interpretive notes. The following is an example of a data encoding process.

2.2. Data analysis

Each interview was analyzed immediately after completion. Along with analyzing the interviews, the researchers have also referred to scientific texts as secondary sources to integrate appropriate elements and prior theories into their theory. The process of simultaneous data collection and analysis by the Zigzag method continued until no new data or categories were found (theoretical saturation) (Figure 1).

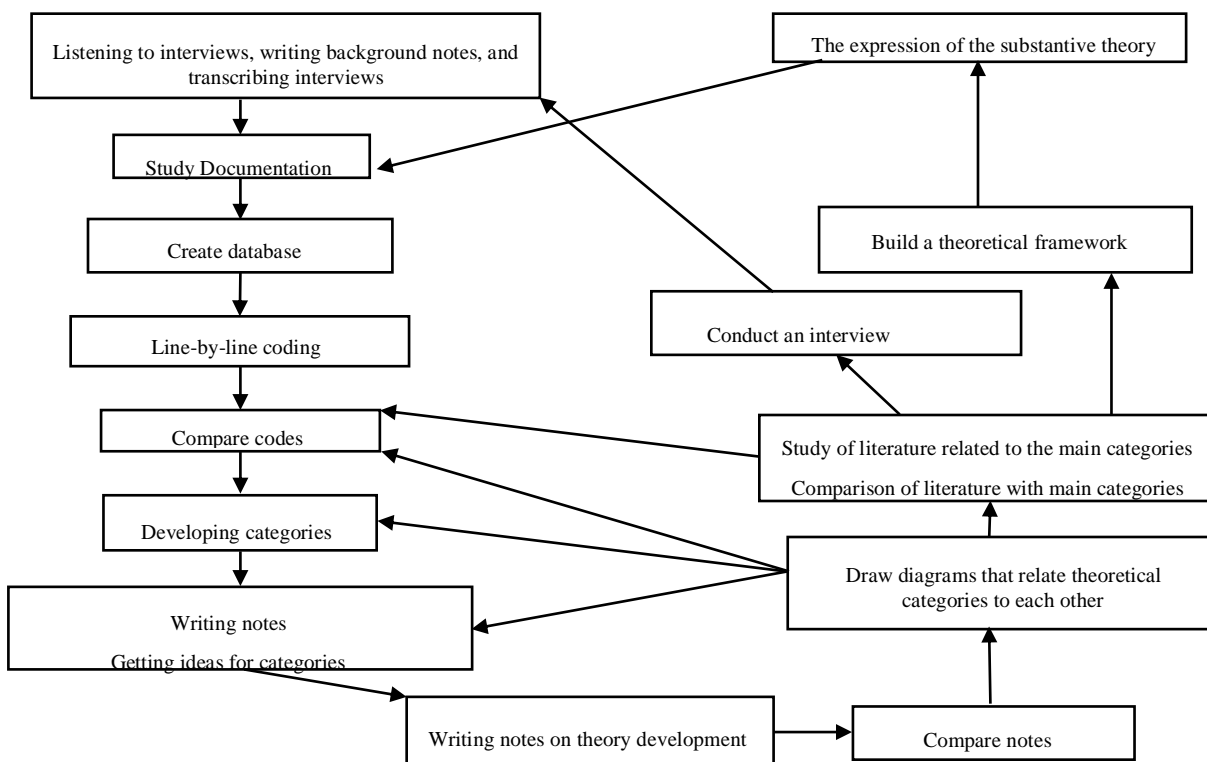


Figure 1. Data collection and analysis

2.3. Research audit

To determine the trustworthiness of the data (which is equivalent to qualitative research in reliability and validity in quantitative research) according to Guba & Lincoln (1989), four criteria of credibility, transferability, dependability, and confirmability were considered and two methods of reappraisal by the researcher and the method of member verification was calculated and evaluated. In the method of decoding, the researcher re-encodes a number of interviews after 30 days and

examines the reliability of the research according to the following formula (Andrew et al., 2011) (Table 4).

Table 4. Calculating intra-subject agreement for research reliability

Interviewee	Total number of codes	Number of Agreements	Number of disagreements	Reliability test
1 P2	29	11	7	75%
2 P5	30	12	6	80%
3 P6	24	8	3	66%
4 P9	33	12	4	72%
Total	116	43	20	74%

As shown in the Table 4, the total number of codes in the two 30-day intervals is 116 codes, the total number of agreements between the two codes is 43 and the total number of disagreements in these two times is 20 codes. The retest stability of the interviews was 74%. Since the stability is greater than 60%, the reliability of the encodings is confirmed (Andrew et al., 2011).

Member checking method was used to determine credibility, transferability and confirmability. The final coding and modeling was provided to three interviewees who applied their views and finally confirmed the overall model of the research. Also, in order to ensure the transferability, the findings of the research were made available to two members of the Entrepreneurship faculty and the transferability of the model was confirmed. Analyzing the data according to the qualitative nature of the information obtained from the interview and extracting similar concepts in them, by qualitative data coding method and by considering the data review process, formulation of coding guide, data organization, Data classification, initial coding, centralized coding, final report compilation, and qualitative data analysis were performed by constructivist method.

3. RESULTS

In this research, an attempt has been made to dismantle the model and present the final theory graphically, based on the researcher's understanding of the context of the studied phenomenon, namely academic entrepreneurship assessment in faculties of sports sciences. Grouping of focused codes in each case and their comparison showed that all the obtained codes can be put in four main categories (Table 5).

Table 5. The example of coding process

Interview	Initial coding	Focused coding	Theoretical
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transcript	Proposals and labeling (Basic concepts)	Categories	coding
<ul style="list-style-type: none"> • Sport science faculties can be effective in promoting academic entrepreneurship, as well as providing the basis for international modeling and partnerships, albeit by providing educational, laboratory, and research costs to faculty members or students. Developed countries have brought universities into industry and industry into universities, so professors at some universities have been forced to commercialize their research ideas every year. 	<ul style="list-style-type: none"> • Developing curricula based on social needs • Partnership of industry and economics in textbook editing • Educational Entrepreneurship Expenditures • Key Entrepreneurial Skills • International Joint Research Projects • International faculty members • Cost of technical and laboratory services for academic entrepreneurship activities • Per capita research of academic activists • Rewarding academic entrepreneurship activities • The Impact of Participation on Entrepreneurial Activities (Idea Development, Innovation, Invention, Knowledge Transfer) in Performance Evaluation and Ranking 	<ul style="list-style-type: none"> • Entrepreneurship education • Develop an entrepreneurial spirit • Financing • International presence • The role of researcher and researcher in solving community problems <p>Educational evaluation system</p>	<ul style="list-style-type: none"> • Academic functions in the path of sport entrepreneurship • Enablers • Entrepreneurial Resource Platform • Optimal patterning

3.1. Requirements

The role of sports science faculties in the process of developing the sports industry and providing social welfare has requirements. These requirements refer to elements such as entrepreneurial orientation, entrepreneurial capital, entrepreneurial passion, and entrepreneurial participation that are essential in the configuration of sport science faculties for the emergence of academic entrepreneurship activities. Requirements are considered as infrastructure and hardware resources in the faculties of sports sciences, the proper evaluation of which will lead to the formation of the institutional culture of the faculties and the creation of the necessary structures for sustainable academic entrepreneurship.

Audretsch (2012) showed that one of the important aspects of developing entrepreneurship in universities is the evolution of structures, processes, and internal aspects. Previously, Pazhouhesh (2017) also showed that the institutional factors affecting the commercialization of Iranian academic research achievements include soft and hard institutional agents. Hard-line long-term institutional agents are collectives who formally assert their constitutional rights and capital in matters such as laws and regulations. According to Gonzalez-Serrano et al. (2023), entering the world of sports entrepreneurship requires strategic activities and improving the competencies of sports entrepreneurs, especially in times of crisis.

The entrepreneurial orientation of universities is one of the most important components of academic entrepreneurship. According to the research findings, the effort to implement and integrate entrepreneurship and the realization of the entrepreneurial university can only be achieved if the faculties are of good quality. This means the commitment to the quality orientation of the faculties to entrepreneurship. In other words, taking advantage of comparative opportunities and benefits and achieving greater added value through dynamic competition in the current competitive environment on the path to sustainable development requires the entrepreneurial orientation of academic activists. These results are confirmed by Ramezanejad et al. (2019).

Entrepreneurial capital is another component. Academic entrepreneurship and the realization of entrepreneurial universities in the faculties of sports science require proper management of financial resources. Therefore, financial management and academic entrepreneurship are mutually related. This means that sports science faculties need diverse financial resources for entrepreneurship, and entrepreneurship will generate diverse financial resources for faculties. As such, it is important to allocate funds and financial resources and support and develop academic entrepreneurs in sports science. Providing facilities, and attracting and identifying resources are part of the activities of the investment fund and the financing office. Keshavarz et al. (2018) also showed that managing financial sources and entrepreneurial investments are among the effective factors in the commercialization of sport management researches.

The motivation and the spirit for learning entrepreneurial skills among the academic actors and also the desire for investing and creating sport startups and self-employment of students in this sense were found to be the important factors in evaluating academic entrepreneurship in sport sciences faculties. Participants in this study acknowledged that the motivation and skill of academic actors to realize entrepreneurship reflect entrepreneurial intentions that influence entrepreneurial behaviors. Academic actors, despite having undergone training and research courses, cannot

practically pave the way for economic and social problems in the sport unless they have entrepreneurial motivation and intention. This part is in line with the findings of Muscio & Ramaciotti (2019); Ashouri et al. (2018). Alizadeh et al. (2015) also showed that sport entrepreneurial instructions in faculties are better to be in line with the entrepreneurial intentions of students. According to Abdzadeh et al. (2022), it is necessary to pay more attention to the components of entrepreneurship in the planning and implementation of educational programs in schools so that physical education students with an entrepreneurial educational approach can graduate as an entrepreneur in the field of sports business. Therefore, along with any measures and planning for entrepreneurship education, evaluating and nurturing entrepreneurial intention is an essential element in the path of entrepreneurship in sport science faculties. The entrepreneurial intention of Students and faculty members with patents, ideas, or business experience must be managed to lead to entrepreneurial behaviors. Khodadadi et al. (2020) found that educational groups can provide the ground for self-success and entrepreneurial intent in sports science students by increasing the motivation for entrepreneurship and strengthening the skills required for entrepreneurship.

Another important element in assessing academic entrepreneurship requirements is the entrepreneurial participation of sport sciences faculties in the realization of a knowledge-based society. Creating attractive places and opportunities for entrepreneurial innovation in sports such as events, growth centers and knowledge-based companies located in science and technology parks is an example of the active participation of sports science faculties in the community. Participant 2 stated, "... We [the faculties of sport sciences] have neglected to be present in the science and technology parks of the universities, and this has led us to content ourselves with education and research." As faculties participate in entrepreneurial events, the research achievements of faculties are taken from the library shelves and become more applicable. The presence of sport science faculties in the economic and social fields is a testament to the applicability of research achievements in the development of sporting products (including goods, services, and processes). Thus, in addition to attracting external venture capital funds, sport science faculties should be regarded as investment institutions in extracurricular entrepreneurial projects in the community. The pursuit of opportunities and investment in extracurricular product and service projects can provide a great advantage to sport science faculties. Each faculty, by participating in entrepreneurial activities, share their values with the community and can accelerate the process of improving the quality of the sports industry. In this context, evaluating the active participation of faculties in sports projects will be a valuable criterion

for realizing their academic entrepreneurship (Keshavarz et al., 2018; Pazhouhesh, 2017; Pyne, Komar & Yousef, 2015).

3.2. Enablers

The enablers as a complement to the requirements category refers to those elements that accelerate the process of academic entrepreneurship and increase the individual and organizational empowerment of sport science faculties. There is now a need to change the way faculties operate and empower their resources by clarifying the impact of change in each of these contexts at national, regional, and international levels (Dastoom et al., 2013). A closer look at the issue of empowering sport science faculties reveals that in order to move from an educational-driven and research-driven approach to entrepreneurial and value-creating, entrepreneurial and value-creation culture must be institutionalized in the faculties and empowered, creative, innovative, productive, risky and independent human resources be nurtured.

It seems formulating and developing curricula based on community needs is the first priority in empowering sport sciences faculties. Curriculum mismatch with the real needs of society is a problem that adds to the current problems of the Iranian sports industry (Keshavarz et al., 2018). Academic actors will not produce useful research output if they are unaware of the needs and desires of the community, and the academic entrepreneurship cycle will stop moving. Therefore, the first step in empowering faculties is to market sport sciences research. This can be done through a variety of strategies such as marketing research, doing organizational projects, and proposing projects outside the university. Participant 11 stated, "The research that we carry on is not according to the demands of the market... In a situation where there is increasing pressure on researchers to achieve and determine the socio-economic impact of research, information, and mapping of research impact paths are needed". The participants stated that increasing inter-sectoral communication and closing the gap between industry and university is the most important and useful strategy for curriculum development and application training. According to the participants, cross-sectoral communication refers to the communication between stakeholders in sport, academia, and society, that can work together to advance the goals of sport sciences.

3.3. Activities

Although in some studies (Klofsten & Jones-Evans, 2000) academic entrepreneurship has been equated with the formation of spin- off, various mechanisms for academic entrepreneurship are common. To evaluate academic entrepreneurship activities in the sport science faculties, seven

specific types of academic entrepreneurship are outlined. Based on the coding of the interviews, academic entrepreneurship by the faculties of sport sciences reflect a total of three perspectives. The first view shows the conflict between university entrepreneurship and the traditional university approach. Hence, academic entrepreneurship typically occurs outside of campus and beyond traditional campus maps (Clafston & Jones-Evans, 2000; Seymour & Topazley, 2017). From a second perspective, academic entrepreneurship is based on creating new venture businesses based on the university's intellectual and scientific assets through the commercialization of research achievements, technology transfer, and reproductive activities (Chrisman et al., 1995). The third perspective expresses an integrated conception of university entrepreneurship based on corporate entrepreneurship and includes the creation, innovation, and strategic renewal of an organization that may take place inside or outside the university (Bengtsson, 2017).

Table 6. Academic Entrepreneurship Activities in Sport Science faculties

Activity	Activity description
Large-scale scientific projects	Obtain large-scale research projects funded by external sources
Research contracts	Contractual or custom research: undertaking specific research projects for sports and non-sport organizations
Patent / Licensing	Patents and licensing of research results to the sports industry
Spin-off _s	Formation of a new company or organization or commercialization of results or exploitation of research results
Crafting workshops	Holding short-term entrepreneurial skills courses inside or outside the faculty to deliver technological innovations
Selling technological products	Commercial sale of sports technology products manufactured and in the faculty

3.4. Consequences

The consequences reflect the internal and external results and effects of entrepreneurial activities employed by academic activists, both students and faculty members. In general, entrepreneurship at the individual or organizational levels has many consequences, and entrepreneurship at sport science faculties has more effects. At the individual level, there are specific implications, such as student employment and monetization, entrepreneurial attitude implementation and expertise, and widespread competition among student-created businesses that focus more on the intrinsic effects of academic entrepreneurship. At the organizational level, academic entrepreneurship activities will lead to outcomes such as faculty reputation, funding, industrial projects, national and international competitiveness, that refers more to the external effects of entrepreneurial activities in sport science faculties. Table 7 shows the most important consequences extracted from the coding of the interviews.

Table 7. The consequences of Academic Entrepreneurship in Sport Science faculties

Consequences	Description of Consequences
Academic Satisfaction	Applying knowledge and research, Increasing interest in education and Increasing applicants for sports science
Quantitative and qualitative improvement of events	Standardization of sports venues and equipment, Application of technological innovations in sporting events, Increasing event competitiveness
Individual and organizational wealth creation	Employment, Financing, Reputation, Implementation of entrepreneurship-based education, Aligning academic functions and activities
Health sector optimization	Activation of health centers, Induction of preventative thinking instead of treatment, Reduction of medical costs, Promotion of motor literacy and Realization of active community
Modernizing the sports industry	Entering technological innovations in manufacturing and services, Specialization and knowledge-based sports businesses, Increasing the economic share of sports

In the final step, for the purpose of displaying centralized and understandable code, the layers are separated and finally the final model of the research is drawn based on the layers. In the figure below (Figure 2), the research achievement in the form of concepts and categories from the interviews is presented creatively in a model.

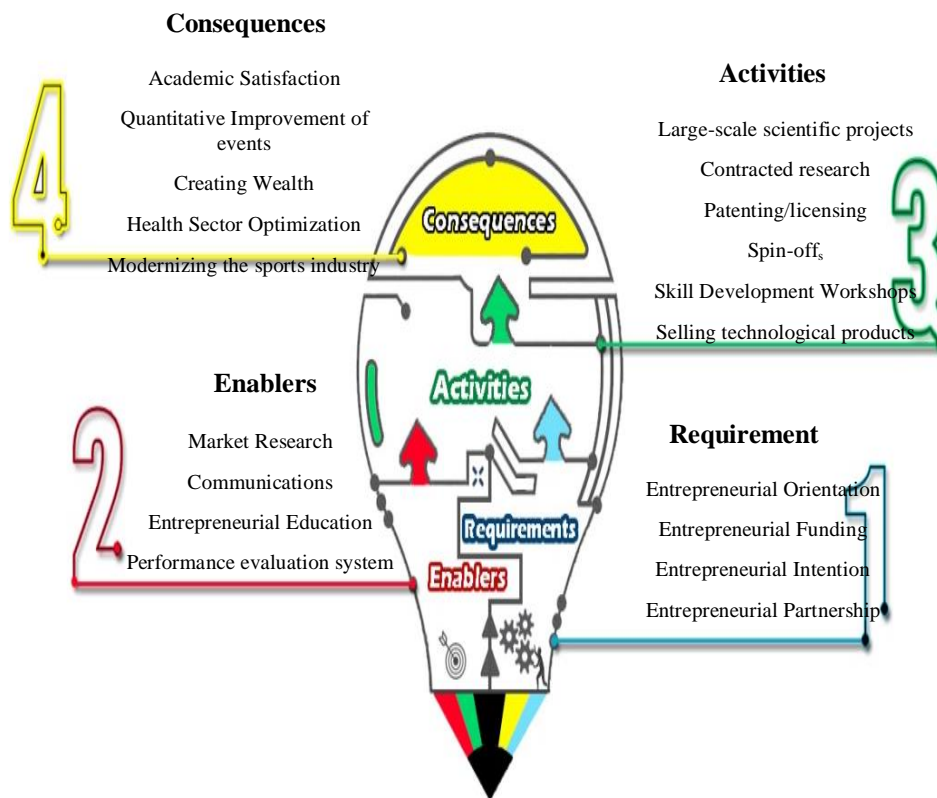


Figure 2. Model of academic entrepreneurship assessment

4. DISCUSSION

The layout of the components of the interviews reveals several important points: First, the order of the components according to the model depicted (Figure 1) shows the impact of each of the components of the requirements and enablers on the entrepreneurial activities and then the consequences. This indicates that the benefits of academic entrepreneurship in the field of sport are derived from the requirements and enablers that are known as the underlying components (hardware and software) in this model. In addition, enhancing entrepreneurial performance in sport science faculties requires integrating entrepreneurial orientation, funding, intention, participation, and training, as well as collaboration, communication, improving performance system, and marketing research achievement. This means that the simultaneous guidance and attention to entrepreneurial and marketing approaches in management and traditional practices (educational and research) can further the sport science faculties' path to academic entrepreneurship. As Rahimi et al. (2020) emphasize one of the valuable and effective ways for sport science faculties to move away from their traditional functions and establish an entrepreneurial university is the governance of knowledge-based culture among academic activists, especially students and faculty members.

The second point is that improving the active capacity of sport science faculties in socio-economic development in a non-role-playing environment requires a balance of functions, the provision of an empowering institutional environment and supportive policymaking, as well as the availability of resources and effective and efficient management. Policymakers and planners, especially the Ministry of Sport and Youth, the Ministry of Education, the National Olympic Committee and the Federations must always go beyond politicized slogan support, believe the valuable place of sport science faculties in the development of sport and next, in the field of economic and social development, and make clear their beliefs in the form of practical support for them to move the sport science faculties on the path to the third and fourth generation of universities. On the other hand, academic activists, such as students, faculty members, and faculty administrators, must always keep their mission in the development of the sports industry and the community around it as a responsible and accountable community and In the light of continuous institutional self-assessment, ensure the efficiency and effectiveness of the sport science faculties as an ever-learning and leading organization committed to achieving excellence and continuous improvement and fulfillment of expected missions. Therefore, like Ratten (2020), we emphasize that the future of sports science lies in the path of commercialization and entering the market. Faculties of sports

sciences should not be alone in this direction, and the need for the cooperation of other institutions is generally felt.

The third point is that the entrepreneurial process and creativity required in academic work is illustrated by the lamp symbol. This model, which is displayed in the form of a lamp, contains steps that will lead to the interpretation of the model. The base of this model is a pencil. The pencil in this model is a definition of sports science knowledge that emerges from the educational and research functions of sport science faculties. It was argued that traditional functions of sport science faculties could move to third-generation universities by integrating entrepreneurial and marketing approaches. Therefore, sport science knowledge is the basis of academic entrepreneurship activities and outcomes, which is one of the technological entrepreneurship examples of universities. As Kaur & Singh (2016) showed cooperation between universities and industry goes beyond the outsourcing of research activities from companies to universities. Today, cooperation means establishing communication in various forms, including strategic partnership networks between companies, suppliers and universities.

5. CONCLUSIONS

Academic entrepreneurship process is shown in different colors based on the knowledge of sports science represented by a lamp and pencil symbol. The colors used in this model are those of the Olympic rings. These colors (red, green, black, yellow and blue) indicate that the process of academic entrepreneurship in sport science faculties should emerge and be implemented in the sport context (from/for sport). This is particularly associated with the concept of 'improving the performance appraisal system' to align the functions of business-scientific goals.

We suggest that the set of introduced components that have appropriate research credibility in different aspects can be used to evaluate the entrepreneurial activities of academic actors and managers of sport science faculties. These components can also be used to evaluate, rank and compare ISSF, an inter-university process (between disciplines, departments, actors). In addition, these components can be used in the evaluation, ranking, and allocation of support and credits to units related to academic business and entrepreneurship such as technology transfer offices, entrepreneurship growth centers, and so on in sport science faculties.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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