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Designing a Model for the Development of Entrepreneurial Skills to Enhance Entrepreneurial Performance among Physical Education Students in Iraqi Universities

ABSTRACT

Universities play a key role in fostering entrepreneurial skills, yet physical education students in Iraq, despite having significant potential, suffer from the lack of an integrated model for improving entrepreneurial performance. Therefore, this study aimed to design a model for developing entrepreneurial skills and enhancing the entrepreneurial performance of physical education students in Iraqi universities. This research employed a mixed-methods approach (qualitative–quantitative). In the qualitative phase, the statistical population included experts and specialists in the fields of physical education and sports entrepreneurship in Iraq. Using purposive and snowball sampling methods, 21 semi-structured interviews were conducted until theoretical saturation was achieved. Data were analyzed using open, axial, and selective coding, and an initial model was extracted. In the quantitative phase, the statistical population comprised managers, faculty members, experts, and sports entrepreneurs in Iraq, from whom 127 questionnaires were collected and analyzed through convenience sampling. The data collection tool was a 99-item questionnaire developed based on the qualitative findings. For data analysis, descriptive statistics, exploratory and confirmatory factor analyses, and structural equation modeling (PLS) were applied. The qualitative findings revealed that five main dimensions, including 20 categories and 99 subcategories, were identifiable in relation to the development of entrepreneurial skills. These dimensions and categories, after undergoing meta-synthesis and validation through two rounds of the Delphi method, were considered the main components of the final model. The quantitative results further showed that the designed model had a good fit and could serve as a reliable framework for improving the entrepreneurial performance of physical education students in Iraqi universities. Overall, the validation of the model through the Delphi method and quantitative analyses indicated that the model enjoyed a satisfactory fit and could be effectively applied as a guideline for educational policymaking, skill-based program design, and student empowerment in the pathway of sports entrepreneurship. Thus, the implementation of this model can play an influential role in advancing academic entrepreneurship and increasing the participation of physical education graduates in economic and social domains.

Keywords: Entrepreneurial skill development, Entrepreneurial performance, Physical education students

Introduction

Entrepreneurship has become a cornerstone of economic growth, innovation, and employment generation in both developed and developing countries. In the current knowledge-driven global economy, universities play a vital role in shaping entrepreneurial mindsets and skills among students, especially in disciplines such as physical education where traditional career pathways may be limited or saturated. The development of entrepreneurial capabilities within higher education

systems is increasingly recognized as a necessary response to rapidly changing market conditions, technological advancements, and societal expectations [1]. Embedding entrepreneurship education in universities not only supports self-employment but also fosters creativity, resilience, and adaptability, which are crucial for sustainable participation in today's labor markets [2].

Entrepreneurship education is no longer viewed solely as the transfer of business knowledge but is increasingly framed as a multidimensional process encompassing emotional intelligence, social intelligence, creativity, and leadership [2, 3]. Research has emphasized that entrepreneurial outcomes are shaped by individual-level attributes such as innovativeness, risk-taking, and proactiveness [4], as well as contextual and institutional factors including cultural norms, regulatory frameworks, and educational opportunities [5].

In higher education contexts, experiential learning approaches that combine theoretical instruction with practical application are considered essential. Programs such as entrepreneurial attachment projects have been shown to enhance students' entrepreneurial capabilities by linking academic learning with real-world business challenges [6]. Similarly, international entrepreneurship initiatives create opportunities for skill development by exposing students to diverse contexts and business environments [1]. The ability to bridge academic training with practical entrepreneurial experience is therefore central to preparing students for complex and uncertain labor markets.

At the individual level, entrepreneurial success is closely tied to cognitive processes such as opportunity recognition and evaluation. The literature highlights that entrepreneurs often rely on different types of information—description-based versus experience-based—in shaping their performance expectations [7]. This underscores the importance of training students not only in technical knowledge but also in critical thinking, problem-solving, and decision-making under uncertainty [8]. Furthermore, the development of entrepreneurial skills has been strongly linked with communication abilities, creativity, and leadership—dimensions that are crucial for both opportunity exploitation and venture sustainability [3].

Psychological and emotional dimensions also play a defining role. Studies have shown that emotional intelligence and self-belief significantly influence entrepreneurial initiative and persistence [2]. Conversely, negative psychological states such as opportunity regret can undermine entrepreneurial motivation and lead to suboptimal decision-making [9]. Thus, building resilience, self-confidence, and adaptive capacity within educational programs is critical for equipping students to face the inevitable uncertainties of entrepreneurship.

Entrepreneurial activity is deeply embedded in broader socio-economic contexts. Factors such as labor market structure, technological advancements, and economic volatility shape the environment in which entrepreneurship unfolds. For instance, the rise of digital technologies has transformed academic entrepreneurship by expanding opportunities for commercialization and new business models [10]. At the same time, the shift toward digital platforms has created both opportunities and challenges in aligning entrepreneurial education with evolving industrial needs [11].

Macroeconomic and policy perspectives also highlight the centrality of entrepreneurship in regional development. Knowledge networks and smart specialization policies are recognized as engines of innovation-led growth, with entrepreneurship serving as a critical channel for translating research into economic value [12]. The complementarity perspective on entrepreneurial ecosystems emphasizes the need to strengthen interconnections between institutional actors—universities, industries, investors, and policymakers—to generate a supportive environment for entrepreneurial activity [13].

For university students, particularly in disciplines such as physical education, entrepreneurship represents both an opportunity and a necessity. On one hand, entrepreneurial ventures offer new pathways for self-employment, business creation, and innovative services in areas such as sports management, health promotion, and fitness industries. On the other hand, structural limitations in traditional employment markets compel students to explore entrepreneurship as an alternative career option [14]. This duality underscores the need for targeted educational strategies that develop both the competencies and the motivation required for successful venture creation.

The empowerment of students through entrepreneurship is also closely tied to gender and inclusivity. For example, research has demonstrated that gender differences significantly shape entrepreneurial risk attitudes, with implications for policy and training design [15]. Likewise, micro-enterprises have been found to play a transformative role in women's empowerment, providing not only financial independence but also greater agency and participation in decision-making [16]. By integrating gender-sensitive approaches into entrepreneurship education, universities can contribute to broader social equity and empowerment agendas.

International comparative research provides valuable insights into how entrepreneurship education and entrepreneurial ecosystems function across different socio-economic contexts. Studies in Europe, for instance, reveal that social and economic factors exert significant influence on entrepreneurial efficiency, with disparities arising across regions [5]. Similarly, cross-national analyses show that entrepreneurial ecosystems must be tailored to local institutional, cultural, and market dynamics in order to generate sustainable outcomes [13].

In the African context, entrepreneurial attributes such as innovativeness, persistence, and networking capacity have been identified as critical for venture creation among university students [17]. Emotional and social intelligence, coupled with practical exposure, have also been found to significantly advance entrepreneurship education [2]. These findings suggest that educational interventions must be designed not only to transfer knowledge but also to nurture holistic skill sets and mindsets that align with local challenges and opportunities.

Despite the growing emphasis on entrepreneurship education, significant challenges remain. Bureaucratic barriers, lack of financial support, and limited access to mentoring and networks often constrain entrepreneurial activity [7]. Furthermore, cultural resistance to change, traditional employment preferences, and risk aversion continue to impede entrepreneurial mindsets in many contexts [3]. These challenges highlight the need for integrated policy frameworks that support entrepreneurship through education, regulation, and institutional capacity-building.

An additional challenge lies in aligning entrepreneurship education with technological trends. The rapid pace of digital transformation requires universities to continuously update curricula, pedagogical approaches, and infrastructure to ensure students acquire relevant competencies [11]. This includes integrating training in digital marketing, financial management, and innovation practices that are directly applicable in dynamic business environments.

While the literature provides valuable insights into entrepreneurship education, entrepreneurial ecosystems, and skill development, there is still a lack of integrated models tailored to specific academic disciplines and regional contexts. Physical education, in particular, represents a field where entrepreneurial potential is significant but underexplored. The sports industry encompasses diverse opportunities ranging from event management and coaching services to health technologies and recreational entrepreneurship, yet students often lack structured pathways to translate their skills into entrepreneurial ventures.

This study aims to fill this gap by designing a comprehensive model for developing entrepreneurial skills to enhance the entrepreneurial performance of physical education students in Iraqi universities. By integrating insights from global entrepreneurship research [1, 2, 4, 10-12], and by addressing contextual barriers and opportunities, the study provides a framework that can serve both educational policymakers and practitioners. Moreover, by applying a mixed-methods approach, the research ensures that the model is both empirically grounded and practically relevant.

Entrepreneurship education has become a global imperative for empowering students, fostering innovation, and driving economic development. The integration of emotional, cognitive, and technical dimensions of entrepreneurship is essential for nurturing resilient and capable entrepreneurs. At the same time, contextual factors such as policy frameworks, socio-economic conditions, and cultural attitudes must be addressed to create enabling environments.

This study contributes to the field by focusing on physical education students in Iraq, a group with unique entrepreneurial potential but limited structural support.

Methods and Materials

The study employed a qualitative–quantitative approach. In the qualitative section, the statistical population included all knowledgeable and expert individuals regarding the development of entrepreneurial skills to enhance the entrepreneurial performance of physical education students in Iraqi universities. From this group, individuals were selected through a completely non-probabilistic and purposive sampling method until theoretical saturation was achieved, in order to conduct interviews and gather the required information related to the research topic. Therefore, both purposive sampling and snowball sampling methods were utilized in this phase. In this study, snowball sampling was carried out in such a way that participants who knew other individuals with relevant experiences and perspectives regarding the subject matter introduced them to participate in the study. Based on this, the interviews began with purposively selected individuals who were experts and knowledgeable about the subject of developing entrepreneurial skills to improve the entrepreneurial performance of physical education students in Iraqi universities. After a three-month process and interviews with 20 experts, theoretical saturation was felt to have been achieved.

Considering the applied nature of the present research, the statistical population included distinguished and knowledgeable faculty members of faculties of physical education and sport sciences, experts and specialists in the field of entrepreneurship (including top sports entrepreneurs and professors in this domain), as well as elites in the field of sports within Iraqi sports organizations. These specialists were active in various educational, research, and executive sections of faculties of physical education and sports organizations and were fully informed and knowledgeable about the subject of the research. Accordingly, in this study, the views of 21 experts were collected through 21 semi-structured interviews. The process ended when the 21st interview reached theoretical saturation. In total, the number of interviewees in the qualitative section was 21, of whom 2 were women and 19 were men (90.47%). In terms of educational level, 23.80% (n = 5) held a bachelor's degree, 33.33% (n = 7) a master's degree, and 42.85% (n = 9) a PhD. Due to the analytical nature of the research method and the emergence of new findings during the process, and in order to confirm or reject details, some experts were interviewed more than once. Ultimately, the model extracted from the qualitative study was reviewed and confirmed by the 21 experts.

In the second stage, aimed at testing the research model and obtaining the necessary information, the statistical population consisted of senior, middle, and operational managers of the Ministry of Youth and Sports, the National Olympic Committee, and selected federations, as well as academic experts, specialists in sports entrepreneurship, and leading sports entrepreneurs in Iraq. These individuals were chosen to provide the required data for testing the model. Given the need for specialized participants in the field of sports entrepreneurship, convenience sampling was used to select the sample.

Table 1.

Statistical Population and Sample in the Second Stage (Quantitative Section) of the Research

Participants	Population Size	Sample Size (Distributed Questionnaires)	Sample Size (Returned Questionnaires)	Sampling Method
Senior managers of the Iraqi Ministry of Youth and Sports	45	34	28	Convenience
Academic experts and professors in Iraq	35	22	17	Convenience
Senior managers and experts of the Iraqi National Olympic Committee	41	31	23	Convenience
Managers of sports federations in Iraq	32	28	21	Convenience
Experts and specialists in entrepreneurship	46	36	26	Convenience
Sports entrepreneurs in Iraq	21	15	12	Convenience
Total	220	166	127	

In the first phase of the study, the researcher conducted a library review of studies related to the dissertation topic and identified key influential components. These components were used as guidelines during qualitative interviews. In the second phase, semi-structured interviews with experts were conducted for information collection. Interviewing is one of the most common methods of data collection in grounded theory. Potential participants were contacted, and those willing to take part were interviewed at a time and place of their choice. In this regard, an interview guide was first sent to participants, which included the research title, objectives, and general questions, to familiarize them with the topic under discussion.

Another data collection instrument was a 99-item questionnaire, designed using interview data. For each factor obtained from the interviews, at least six questions were developed. These six questions represented indicators of entrepreneurial skill development for enhancing the entrepreneurial performance of physical education students in Iraqi universities from different dimensions and ultimately measured the impact of each factor on the development of entrepreneurship in the educational system of physical education and sport sciences.

In the first stage of the research, due to the use of in-depth interviews, qualitative data analysis methods were applied. Open, axial, and selective coding techniques were employed for the analysis and categorization of data. By analyzing the relationships among categories, a grounded theory-based model was developed.

In the second stage of the study, descriptive statistics (mean, standard deviation, frequency, percentage, etc.) were used to analyze data and demographic characteristics. At the inferential level, the Kolmogorov–Smirnov (K-S) test was employed to assess the normality of the data distribution, and exploratory factor analysis with Varimax rotation was conducted using SPSS ver. 20. To evaluate construct validity, confirmatory factor analysis and structural equation modeling were performed using the partial least squares (PLS) method with Smart PLS3 software to test the model of entrepreneurial skill development for enhancing the entrepreneurial performance of physical education students in Iraqi universities.

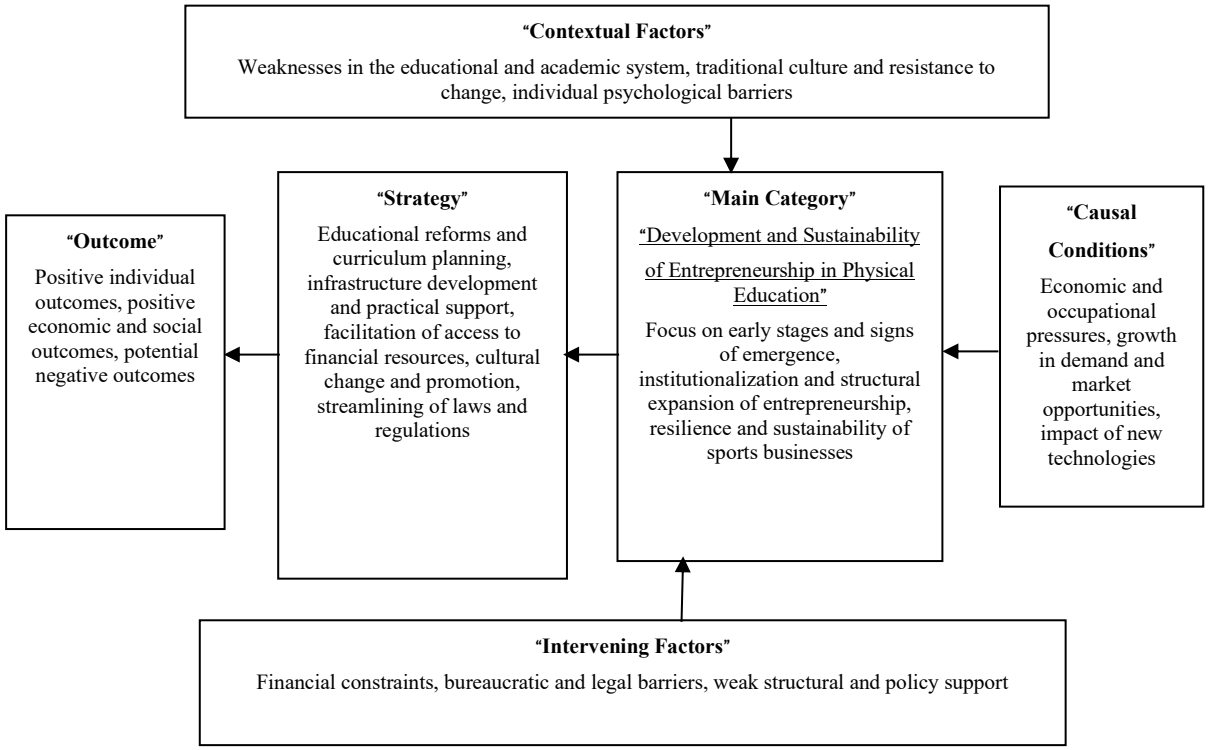
Findings and Results

Based on the results obtained from the qualitative interview stage, five dimensions consisting of 20 categories and 99 subcategories were identified. According to the results, the extracted subcategories were reviewed by experts using the

Delphi method, and the designed model for the development of entrepreneurial skills to enhance the entrepreneurial performance of physical education students in Iraqi universities was confirmed by experts. Accordingly, after identifying the final subcategories through interviews with experts and extracting subcategories using the meta-synthesis method, and validating them through a two-round Delphi approach, the final dimensions and categories of the qualitative stage were presented in Diagram 1. These elements constitute the foundation upon which the general design of the research is based.

Figure 1.

Model of Developing Entrepreneurial Skills to Enhance the Entrepreneurial Performance of Physical Education Students in Iraqi Universities



As shown, the subcategories of the model for developing entrepreneurial skills to enhance the entrepreneurial performance of physical education students in Iraqi universities were derived through an inductive reasoning process, moving from part to whole and from empirical data toward theory. Using the influential subcategories in the design of the model, six main themes of grounded theory were identified. The general qualitative findings of this study are summarized in Table 2.

Table 2.

Number of Categories and Subcategories

Type	Number
Subcategory	99
Category	20
Dimension	6

Overall, based on the output of the qualitative phase, a questionnaire was developed for quantitative implementation and model fitting. Subsequently, using the structural equation modeling method, the findings of the qualitative section were analyzed and fitted, and the interpretive structural modeling approach was applied to present the final model. The factorial model of the main category was measured with 12 subcategories, as shown in Table 3. These subcategories included q1 to

q12. Estimates of standardized parameters indicate that the exploratory and confirmatory factor analyses revealed a good model fit, as well as standardized factor loadings above 0.50 for all 12 subcategories, all statistically significant at the 0.05 level.

Table 3.

Standardized Coefficient and Significance Level of Main Category Items

Component	Row	Factor Loading	Item Label	Status
Formation and growth of innovative ideas in sports – Focus on early stages and signs of emergence	1	0.60	Q1	Confirmed
Change in society's and students' perception of the nature of employment	2	0.74	Q2	Confirmed
Increase in students' inclination toward self-employment and business creation	3	0.81	Q3	Confirmed
Increase in small projects and individual student initiatives	4	0.84	Q4	Confirmed
Emergence of initial successful models of sports entrepreneurs	5	0.74	Q5	Confirmed
Increased university participation in supporting student entrepreneurship – Institutionalization and structural expansion of entrepreneurship	6	0.74	Q6	Confirmed
Development of supportive infrastructures (incubators, accelerators)	7	0.79	Q7	Confirmed
Increased cooperation among universities, industry, and the private sector in sports entrepreneurship	8	0.75	Q8	Confirmed
Continuity and survival of emerging sports businesses – Resilience and sustainability of sports enterprises	9	0.70	Q9	Confirmed
Ability of sports businesses to attract and retain customers	10	0.69	Q10	Confirmed
Capacity for adaptation and continuous innovation in response to market changes	11	0.66	Q11	Confirmed
Maintaining the quality and credibility of sports products/services over time	12	0.51	Q12	Confirmed

The factorial model of causal conditions was measured with 12 subcategories, as shown in Table 4. These subcategories included q13 to q24. Estimates of standardized parameters show that exploratory and confirmatory factor analyses confirmed a good model fit, with standardized factor loadings above 0.50 for all 12 subcategories, all statistically significant at the 0.05 level.

Table 4.

Standardized Coefficient and Significance Level of Causal Condition Items

Component	Row	Factor Loading	Item Label	Status
Decline in traditional and governmental job opportunities – Economic and employment pressures	13	0.63	Q13	Confirmed
Increased unemployment and job insecurity	14	0.72	Q14	Confirmed
Poor economic conditions and inflation	15	0.87	Q15	Confirmed
Necessity of seeking alternative income sources and self-reliance	16	0.62	Q16	Confirmed
Increased public awareness of the importance of health and sports – Growth in demand and market opportunities	17	0.73	Q17	Confirmed
Growth in demand for modern and personalized sports services	18	0.78	Q18	Confirmed
Growth of the sports, health, and private sectors	19	0.75	Q19	Confirmed
Changing labor market and societal needs toward practical skills and active lifestyles	20	0.65	Q20	Confirmed
Impact of new technologies (wearables, applications) – Influence of new technologies	21	0.72	Q21	Confirmed
Positive impact of the Internet and online platforms	22	0.82	Q22	Confirmed
Expansion of online platforms for education and marketing	23	0.74	Q23	Confirmed
Impact of digital media and social networks on business	24	0.65	Q24	Confirmed

The factorial model of contextual conditions was measured with 14 subcategories, as shown in Table 5. These subcategories included q25 to q38. Estimates of standardized parameters indicate that exploratory and confirmatory factor analyses confirmed a good model fit, with standardized factor loadings above 0.50 for all 14 subcategories, all statistically significant at the 0.05 level.

Table 5.

Standardized Coefficient and Significance Level of Contextual Condition Items

Component	Row	Factor Loading	Item Label	Status
Weakness in teaching managerial, financial, marketing, and business skills – Weak educational and academic system	25	0.64	Q25	Confirmed
Lack of practical and project-based approaches in universities	26	0.69	Q26	Confirmed
Absence of specialized entrepreneurship curricula	27	0.69	Q27	Confirmed

Lack of suitable spaces for ideation and innovation at universities	28	0.81	Q28	Confirmed
Lack of student familiarity with real labor markets/entrepreneurial opportunities	29	0.67	Q29	Confirmed
Weak coordination between universities and higher-level institutions	30	0.59	Q30	Confirmed
Resistance to change and innovation in academic systems – Traditional culture and resistance to change	31	0.60	Q31	Confirmed
Lack of a culture supporting innovation in society	32	0.75	Q32	Confirmed
"Employee culture" and avoidance of risk-taking	33	0.81	Q33	Confirmed
Emphasis on governmental employment and dependency on the state	34	0.77	Q34	Confirmed
Weakening of initiative and proactiveness	35	0.75	Q35	Confirmed
Fear of risk and failure – Individual psychological barriers	36	0.66	Q36	Confirmed
Lack of confidence in personal abilities and self-efficacy	37	0.74	Q37	Confirmed
Concerns about an uncertain future and job insecurity	38	0.72	Q38	Confirmed

The factorial model of intervening factors was measured with 11 subcategories, as shown in Table 6. These subcategories included q39 to q49. Estimates of standardized parameters indicate that exploratory and confirmatory factor analyses confirmed a good model fit, with standardized factor loadings above 0.50 for all 11 subcategories, all statistically significant at the 0.05 level.

Table 6.

Standardized Coefficients and Significance Levels for Items of Intervening Factors

Component	Item	Factor Loading	Item Label	Status
Financial constraints	39. Limited financial resources and lack of support for nascent ideas	0.63	Q39	Confirmed
	40. Need for easy access to capital and bank loans/facilities	0.73	Q40	Confirmed
	41. Lack of financial support and investment	0.57	Q41	Confirmed
Bureaucratic and legal barriers	42. Bureaucracy and lengthy administrative processes	0.74	Q42	Confirmed
	43. Complexity of business laws and regulations	0.73	Q43	Confirmed
	44. Constraints and complexities in obtaining licenses	0.57	Q44	Confirmed
Weak structural and policy support	45. Lack of specialized support institutions	0.54	Q45	Confirmed
	46. Absence of clear supportive laws and policies for start-ups	0.67	Q46	Confirmed
	47. Political instability and lack of governmental support for small businesses	0.78	Q47	Confirmed
	48. Lack of legal protection for intellectual property rights	0.80	Q48	Confirmed
	49. Insufficient support from family and society	0.68	Q49	Confirmed

The factorial model of strategy factors was measured with 31 subcategories, as shown in Table 7. These subcategories included q50 to q81. Estimates of standardized parameters indicate that the results of exploratory and confirmatory factor analyses demonstrated a good model fit, and standardized factor loadings exceeded 0.50 for all 31 subcategories, all statistically significant at the 0.05 level.

Table 7.

Standardized Coefficients and Significance Levels for Items of Strategy Factors

Component	Item Label	Factor Loading	Item Label	Status
Educational reforms and curriculum planning	50. Integrating entrepreneurship courses with practical and project-based approaches	0.40	Q50	Confirmed
	51. Creating training programs focused on soft and applied skills	0.45	Q51	Confirmed
	52. Providing practical and field-based training	0.42	Q52	Confirmed
	53. Developing market insight and opportunity-recognition competencies	0.53	Q53	Confirmed
	54. Training in capital acquisition and financial management skills	0.53	Q54	Confirmed
	55. Training in strategic planning and decision-making skills	0.55	Q55	Confirmed
	56. Training in digital marketing and personal branding skills	0.64	Q56	Confirmed
	57. Training in communication and networking skills	0.72	Q57	Confirmed
	58. Training in understanding social and political issues related to sports	0.74	Q58	Confirmed
	59. Training in emerging technologies and developments in the sports industry	0.71	Q59	Confirmed
	60. Developing practical expertise in a sports discipline and its management	0.79	Q60	Confirmed
	61. Gaining experience in organizing sporting events	0.71	Q61	Confirmed
	62. Strengthening leadership and coordination skills in sports business	0.59	Q62	Confirmed
Infrastructure development and practical support	63. Establishing specialized incubators and accelerators at universities	0.53	Q63	Confirmed

	64. Holding networking and mentoring events	0.61	Q64	Confirmed
	65. Conducting training courses and practical workshops in collaboration with industry and successful entrepreneurs	0.65	Q65	Confirmed
	66. Establishing counseling and mentoring centers at universities	0.72	Q66	Confirmed
	67. Supporting student digital platforms and online branding	0.79	Q67	Confirmed
	68. Organizing ideation and start-up competitions	0.77	Q68	Confirmed
	69. Student participation in real projects with companies and internship opportunities	0.68	Q69	Confirmed
Facilitating access to financial resources	70. Establishing and expanding funds to support student ideas	0.70	Q70	Confirmed
	71. Facilitating access to low-interest loans and banking facilities	0.76	Q71	Confirmed
	72. Creating online platforms for connecting with investors	0.79	Q72	Confirmed
	73. Attracting investors and private-sector financial support	0.68	Q73	Confirmed
Cultural change and promotion	74. Shifting faculty and administrators' attitudes toward entrepreneurship	0.79	Q74	Confirmed
	75. Shifting societal attitudes toward entrepreneurship and risk acceptance	0.72	Q75	Confirmed
	76. Transforming university culture toward innovation and its support	0.73	Q76	Confirmed
	77. Encouraging participation in entrepreneurship competitions and promotional events	0.55	Q77	Confirmed
	78. Changing students' mindset from salaried employment to entrepreneurship	0.38	Q78	Confirmed
Streamlining laws and regulations	79. Simplifying company registration processes and obtaining licenses	0.75	Q79	Confirmed
	80. Formulating and implementing specific supportive laws for start-ups	0.76	Q80	Confirmed
	81. Clarifying regulations and providing legal guidance	0.67	Q81	Confirmed

The factorial model of outcome factors was measured with 18 subcategories, as shown in Table 8. These subcategories included q82 to q99. Estimates of standardized parameters indicate that the results of exploratory and confirmatory factor analyses demonstrated a good model fit, and standardized factor loadings exceeded 0.50 for all 18 subcategories, all statistically significant at the 0.05 level.

Table 8.

Standardized Coefficients and Significance Levels for Items of Outcome Factors

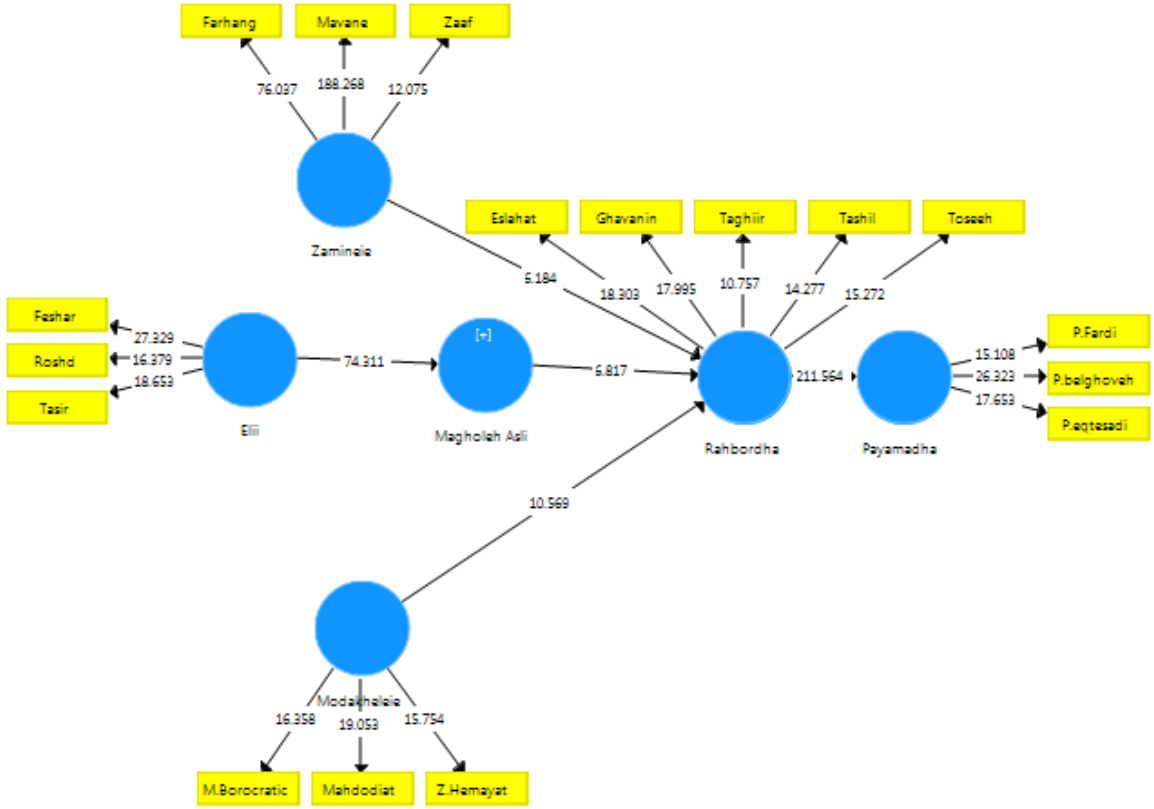
Component	Item Label	Factor Loading	Item Label	Status
Positive individual outcomes	82. Increased self-employment and reduced unemployment rate	0.65	Q82	Confirmed
	83. Greater financial and occupational independence	0.69	Q83	Confirmed
	84. Enhanced self-belief and self-confidence	0.73	Q84	Confirmed
	85. Improved problem-solving and leadership skills	0.74	Q85	Confirmed
	86. Learning time and resource management	0.67	Q86	Confirmed
Positive economic and social outcomes	87. Development of a knowledge-based economy in sports	0.49	Q87	Confirmed
	88. Advancement of innovation and creativity in the sports industry	0.60	Q88	Confirmed
	89. Increased job opportunities and reduced unemployment	0.67	Q89	Confirmed
	90. Improved quality and diversity of sports services	0.69	Q90	Confirmed
	91. Enhanced university reputation and cultivation of leaders and labor markets	0.60	Q91	Confirmed
	92. Creation of added value in the sports industry	0.65	Q92	Confirmed
	93. Development of the national sports entrepreneurship ecosystem	0.72	Q93	Confirmed
Potential negative outcomes	94. Risk of unhealthy competition and project non-sustainability	0.69	Q94	Confirmed
	95. Risk of financial failure and discouragement/loss of motivation	0.66	Q95	Confirmed
	96. Risk of fraud and exploitation of ideas/unauthorized projects	0.73	Q96	Confirmed
	97. Psychological stress due to failure/lack of preparedness	0.68	Q97	Confirmed
	98. Creation of gaps among students	0.63	Q98	Confirmed
	99. Insufficient student experience	0.48	Q99	Confirmed

Factor analysis Diagram 2 shows that all paths are significant at the 95% confidence level. To assess the significance of relationships between variables, the t statistic (t-value) is used. Because significance is examined at the 0.05 error level, if the observed factor loadings yield a t-value greater than 1.96, the relationship is significant. For a relationship to be significant, the absolute value of the significance coefficient must exceed 1.96; thus, it can be concluded that the relationships among variables are significant. The strength of the relationship between a factor (latent variable) and an observed variable is indicated by the factor loading. The factor loading ranges between 0 and 1. If the factor loading is less than 0.30, the relationship is considered weak and is discarded. A factor loading between 0.30 and 0.60 is acceptable, and if it is greater

than 0.60, it is highly desirable. Ovals represent latent variables or factors, rectangles indicate the identified subcategories, arrows from ovals to rectangles show which items load on which factor, and the values written on them show the proportion of item variance explained by the factor. Small arrows indicate residual variance (error) not explained by the factor.

Figure 2.

Design of the Model for Developing Entrepreneurial Skills to Enhance the Entrepreneurial Performance of Physical Education Students in Iraqi Universities in the Significance State



Elli: Causal Conditions; Zamineie: Contextual Conditions; Magholeh Asli: Core Phenomenon; Rahbordha: Strategies; Payamadha: Outcomes.

The values of the average variance extracted for the study variables are presented in Table 9. As observed, the average variance extracted for all main variables of the study is greater than 0.50.

Table 9.

Average Variance Extracted (AVE) for Study Variables

Variables	Average Variance Extracted (AVE > 0.50)
Causal factors	0.526
Main category	0.536
Intervening factors	0.591
Outcomes	0.535
Strategies	0.556
Contextual factors	0.689

Discussion and Conclusion

The findings of this study demonstrate that the development of entrepreneurial skills for physical education students in Iraqi universities can be conceptualized through a multidimensional model consisting of six overarching dimensions, 20

categories, and 99 subcategories. The structural equation modeling confirmed that the model had good fit indices, validating the qualitative insights derived from expert interviews. The results underscore that entrepreneurial performance among physical education students is influenced by contextual, causal, intervening, and strategic factors, with clear positive and negative consequences emerging from entrepreneurial engagement.

One of the central findings is that entrepreneurial development in physical education must begin with fostering innovative ideas, nurturing self-employment intentions, and strengthening the resilience of new ventures. This aligns with research emphasizing that entrepreneurial intention among students is shaped by attributes such as risk-taking, autonomy, and proactiveness [4]. The findings also support the assertion that entrepreneurship in higher education settings requires moving beyond theoretical instruction to practical, project-based experiences that facilitate opportunity recognition and venture creation [6].

The identification of causal conditions, including economic pressures, growth in market demand, and the influence of new technologies, reflects broader structural realities. Students face limited traditional employment opportunities and are increasingly compelled to view entrepreneurship as either an opportunity or a necessity [14]. This dual nature of entrepreneurship has been confirmed across different contexts, demonstrating that while some students are motivated by creativity and innovation, others turn to entrepreneurship as a coping mechanism in response to labor market instability [15]. Our findings therefore highlight the importance of addressing both motivational pathways when designing educational interventions.

Contextual factors such as weaknesses in educational systems, cultural resistance to change, and individual psychological barriers were also shown to constrain entrepreneurial activity. This finding is consistent with prior studies that identified the absence of project-based curricula and the prevalence of risk-averse mindsets as major inhibitors of student entrepreneurship [3]. Similarly, the lack of supportive networks and insufficient entrepreneurial culture in universities has been widely reported as a barrier to effective skill development [1]. By confirming these patterns in the Iraqi higher education context, our study illustrates the urgent need for institutional reforms to align education with market realities.

Intervening factors such as financial constraints, bureaucratic barriers, and limited structural support further hindered entrepreneurial engagement among students. These barriers echo previous evidence that entrepreneurs often struggle with institutional inefficiencies, lack of legal protection, and restricted access to credit facilities [5]. Particularly in developing economies, bureaucratic obstacles and policy gaps are critical deterrents, discouraging new ventures and dampening students' confidence in pursuing entrepreneurial careers [13]. Our study reinforces these concerns and suggests that removing structural bottlenecks is a prerequisite for building a sustainable entrepreneurial ecosystem.

The strategic factors identified in this study—educational reforms, infrastructure development, financial accessibility, cultural change, and regulatory streamlining—provide a roadmap for overcoming the above barriers. These align closely with international studies emphasizing that entrepreneurship education must integrate soft skills, digital competencies, and experiential learning into curricula [11]. The inclusion of strategies such as mentoring programs, incubators, and collaboration with industry reflects global best practices for fostering entrepreneurial ecosystems within universities [1].

Our results also show that entrepreneurial outcomes can be both positive and negative. Positive outcomes include increased self-employment, enhanced self-confidence, knowledge-based economic development, and improved service quality in sports industries. This corresponds with studies showing that entrepreneurship empowers students not only

economically but also socially and psychologically [16]. At the same time, the findings caution against potential negative outcomes such as unhealthy competition, financial failure, and psychological stress. This is consistent with research on entrepreneurial regret, which underscores how failed ventures can reduce motivation and harm long-term entrepreneurial engagement [9]. Addressing these risks requires embedding resilience-building and failure-management training into educational programs.

Importantly, the study demonstrates that entrepreneurial skill development cannot be separated from digital transformation. The role of emerging technologies, including digital platforms and online ecosystems, was found to significantly shape entrepreneurial opportunities in physical education. This resonates with evidence that digitalization is redefining academic entrepreneurship and expanding access to new markets [10]. Studies confirm that digital skills, innovation attitudes, and adaptability to technological shifts are increasingly decisive in determining entrepreneurial success [11]. The Iraqi context is no exception, and educational frameworks must prioritize digital literacy alongside traditional entrepreneurial skills.

At a macro level, the findings emphasize the role of entrepreneurship in broader socio-economic development. By creating new job opportunities and enhancing innovation capacity, entrepreneurship contributes to smart specialization and regional growth [12]. Similarly, the complementarity perspective suggests that entrepreneurial ecosystems must leverage synergies between policy, academia, and industry to foster sustainable outcomes [13]. Our study confirms these theoretical insights, showing that entrepreneurship in physical education can become a driver of both local and national economic development when embedded within a supportive ecosystem.

The results also highlight the importance of personal and social intelligence in entrepreneurship. Students' ability to navigate social networks, manage emotions, and communicate effectively was shown to play a critical role in entrepreneurial outcomes. This finding echoes the growing recognition that emotional intelligence and social intelligence are vital components of entrepreneurship education [2]. Furthermore, entrepreneurial attributes such as creativity, leadership, and opportunity-seeking behavior have been confirmed as predictors of venture creation in student populations [8, 17]. By validating these relationships, the present study underscores the holistic nature of entrepreneurial skill development.

Finally, the study contributes to international entrepreneurship literature by situating the Iraqi case within broader comparative perspectives. Research across European and African contexts has shown that social, cultural, and economic conditions strongly mediate the efficiency of entrepreneurship [5, 15, 17]. Our findings reinforce this point, showing that while the core entrepreneurial attributes remain constant across contexts, their expression and outcomes are shaped by local barriers and opportunities.

Despite its contributions, this study has several limitations. First, the research was conducted within Iraqi universities, which may limit the generalizability of the findings to other national or regional contexts. While the mixed-methods approach provided both qualitative depth and quantitative rigor, the reliance on purposive and convenience sampling introduces potential bias in the selection of participants. Additionally, the data collection was cross-sectional, preventing examination of long-term effects of entrepreneurial education on students' career trajectories. The use of self-reported measures in both interviews and surveys may also be subject to social desirability bias, with participants possibly overstating their entrepreneurial capacities or intentions. Finally, while the study captured a wide range of dimensions and subcategories, it

did not fully account for external shocks such as political instability, pandemics, or global economic crises that could dramatically alter entrepreneurial ecosystems.

Future research should expand the scope of analysis by incorporating longitudinal designs that track students over time to assess the sustained impact of entrepreneurial training on actual venture creation and business success. Comparative studies across different academic disciplines could also provide valuable insights into whether the entrepreneurial model developed here is specific to physical education or broadly applicable across fields. Cross-national research, particularly in Middle Eastern and developing countries, would further illuminate how contextual differences influence entrepreneurial skill development. Future studies should also examine the role of digital technologies more closely, including the potential of artificial intelligence, virtual learning platforms, and digital incubators in shaping entrepreneurial competencies. Finally, integrating psychological assessments and behavioral experiments into entrepreneurship education research could deepen understanding of how traits such as emotional intelligence, resilience, and risk perception directly impact entrepreneurial outcomes.

For practitioners, several implications emerge from this study. Universities should embed entrepreneurship education into physical education curricula, emphasizing practical, project-based learning alongside theoretical knowledge. Establishing incubators, mentorship programs, and industry partnerships within faculties of physical education can provide students with real-world exposure and resources for venture creation. Policymakers should reduce bureaucratic barriers and introduce clear legal protections for start-ups to build trust and confidence among student entrepreneurs. At the institutional level, fostering a culture of innovation and risk acceptance is crucial, requiring leadership commitment to reform academic programs and reward entrepreneurial initiatives. Finally, targeted support for women and marginalized groups in entrepreneurship programs can ensure inclusivity and broaden the societal impact of entrepreneurship education.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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