TPM Vol. 32, No. S7, 2025
ISSN: 1972-6325
https://www.tpmap.org/

STRATEGIC HIGHER EDUCATION MANAGEMENT FOR CAREER SUSTAINABILITY: A QUANTITATIVE STUDY ON STUDENT-ATHLETES' CAREER READINESS IN HENAN PROVINCE UNIVERSITIES

[1] TIAN YAN, [2] MOHAMAD NIZAM NAZARUDIN, [3] XIE PEI, [4] GUO YANG

[1][2] [3][4] UNIVERSITI KEBANGSAAN MALAYSIA
EMAIL: [1]p125714@siswa.ukm.edu.my,[2] mohdnizam@ukm.edu.my, [3]p126468@siswa.ukm.edu.my, [4]p125491@siswa.ukm.edu.my

Abstract— In an increasingly competitive and uncertain global job market, sustainable career planning has become critical, especially for student-athletes who must balance academic and athletic commitments. This study investigates the impact of higher education programs, specifically their management structures and support systems, on the career readiness of university student-athletes in Henan Province, China. A quantitative research design was employed using a structured questionnaire administered to 382 student-athletes across six public universities. Key dimensions included institutional support, academic flexibility, career counselling services, and the integration of athletic and academic departments. Data were analysed using SPSS v29, employing descriptive statistics, Pearson correlation, and multiple linear regression. The findings reveal a statistically significant relationship between perceived institutional support and student-athletes' career readiness ($r = .672$, $p < .01$). Multiple regression analysis showed that academic flexibility ($\beta = .415$, $p < .001$) and career counselling availability ($\beta = .371$, $p < .001$) were strong predictors of career readiness, accounting for 49.6% of the total variance ($R^2 = .496$, $F(4,377) = 92.51$, $p < .001$). Notably, 63% of respondents reported inadequate coordination between academic and athletic units, while 58% felt unprepared for career transitions post-graduation. The results underscore the critical role of strategic management in higher education to ensure career sustainability for this vulnerable population. This study contributes to both the education management and sports policy literature by positioning career readiness as a key component of sustainability in university governance. Recommendations include developing integrated dual-career pathways, enhancing cross-department collaboration, and embedding career guidance into the athletic experience. Future research should consider longitudinal tracking of career trajectories and extend the model to other provinces to assess national policy implications

Index Terms—Higher education, strategic management, student-athletes, career readiness, sustainability

I. INTRODUCTION

In the evolving landscape of global higher education, universities are increasingly tasked with preparing graduates to navigate volatile, uncertain, complex, and ambiguous labour markets. Career readiness encompassing employability skills, adaptability, and proactive career management has emerged as a central measure of institutional effectiveness. This imperative is magnified in the era of the Fourth Industrial Revolution, where rapid technological change and global competition require graduates to integrate technical proficiency with socioemotional competencies, resilience, and lifelong learning capabilities [1], [2].

Within this context, student-athletes represent a unique cohort facing the dual demands of academic and athletic excellence. Their career development is shaped not only by individual attributes such as professional identity, time management, and self-efficacy but also by the strategic management and institutional support structures available to them [3], [4]. Evidence suggests that dual career pathways, when supported by flexible academic scheduling, integrated career services, and targeted mentoring, can enhance human and social capital, strengthen career adaptability, and improve post-sport employability [5]. However, in many higher education settings, including Chinese universities, such integration remains inconsistent, with gaps in coordination between athletic and academic units limiting sustainable career outcomes [6].

Higher education management plays a decisive role in bridging these gaps. Strategic planning, participatory governance, and stakeholder engagement are critical to aligning academic programs with career readiness objectives [7], [8]. Institutional strategies that embed career education into curricula, integrate practical experiences such as internships, and foster cross-department collaboration have been shown to strengthen employability outcomes [9], [10]. For student-athletes, such approaches can address common barriers, including scheduling conflicts, limited access to career counselling, and inadequate transition support systems [11].

Henan Province, a central hub for both academic development and competitive sports in China, provides an important case for examining the interplay between strategic higher education management and the career readiness of student-athletes. Despite national initiatives promoting holistic education and talent development, disparities in institutional capacity, resource allocation, and program design persist across universities. This study addresses this gap by quantitatively evaluating the influence of institutional support, academic flexibility, career counselling, and athletic–academic integration on the career readiness of student-athletes in universities in Henan Province. By adopting a management-focused lens, the research aims to contribute to sustainable career pathways for this population, aligning with broader policy and development goals.

A. Career Readiness and Student-Athletes in Higher Education

In the evolving landscape of global higher education, universities are increasingly tasked with preparing graduates to navigate volatile, uncertain, complex, and ambiguous labour markets. Career readiness encompassing employability skills, adaptability, and proactive career management has emerged as a central measure of institutional effectiveness. This imperative is magnified in the era of the Fourth Industrial Revolution, where rapid technological change and global competition require graduates to integrate technical proficiency with socioemotional competencies, resilience, and lifelong learning. Collaboration has been shown to strengthen employability outcomes [9], [10]. For student-athletes, such approaches can address common barriers, including scheduling conflicts, limited access to career counselling, and inadequate transition support systems [11].

Henan Province, a central hub for both academic development and competitive sports in China, provides an important case for examining the interplay between strategic higher education management and the career readiness of student-athletes. Despite national initiatives' capabilities [1], [2]. Within this context, student-athletes represent a unique cohort facing the dual demands of academic and athletic excellence. Their career development is shaped not only by individual attributes such as professional identity, time management, and self-efficacy but also by the strategic management and institutional support structures available to them [3], [4]. Evidence suggests that dual career pathways, when supported by flexible academic scheduling, integrated career services, and targeted mentoring, can enhance human and social capital, strengthen career adaptability, and improve post-sport employability [5]. However, in many higher education settings, including Chinese universities, such integration remains inconsistent, with gaps in coordination between athletic and academic units limiting sustainable career outcomes [6].

Higher education management plays a decisive role in bridging these gaps. Strategic planning, participatory governance, and stakeholder engagement are critical to aligning academic programs with career readiness objectives [7], [8]. Institutional strategies that embed career education into curricula, integrate practical experiences such as internships, and foster cross-departmental promotion of holistic education and talent development, disparities in institutional capacity, resource allocation, and program design persist across universities.

B. Career Readiness in the Higher Education Landscape

Career readiness has become a defining benchmark for evaluating higher education's effectiveness in preparing graduates for integration into the labour market. It involves acquiring competencies, attributes, and experiences that enable individuals to enter, adapt, and progress in an increasingly dynamic professional environment. As noted in [1], career readiness extends beyond technical proficiency, encompassing socioemotional competencies, adaptability, and a proactive approach to lifelong learning. In the context of the Fourth Industrial Revolution, characterised by technological disruption, evolving industry demands, and global competition, graduates must demonstrate agility and resilience, enabling them to navigate career transitions and sustain employability across their lifespan [2].

Within this broader landscape, student-athletes represent a distinct cohort whose pathways to career readiness are influenced by their dual engagement in academic and competitive sporting commitments. While this dual role fosters transferable skills such as discipline, leadership, and teamwork, it also introduces challenges in balancing time demands, meeting academic requirements, and accessing tailored career development support [4].

C. Student-Athletes' Career Development and Employability

The career development of student-athletes is shaped by a combination of individual attributes and structural determinants. As highlighted in [3], professional identity is a key factor, with those who identify strongly with both academic and athletic roles showing higher career adaptability. Time management acts as a crucial mediating variable, enabling student-athletes to meet competing demands while engaging in career exploration. Well-structured dual-career programs have been shown to enhance employability outcomes. Evidence from [5] demonstrates that such programs strengthen human and social capital, expand networking opportunities, provide practical work experiences, and boost self-efficacy, ultimately leading to better preparedness for post-sport careers and aligning with global sustainability objectives for higher education.

However, the absence of adequate institutional structures risks undermining this model, as rigid academic policies, limited scheduling flexibility, and insufficient access to athlete-specific career counselling can impede its

effectiveness [6]. Comparative findings from [11] indicate that inadequate coordination between academic and athletic departments remains a recurring issue in various contexts, including Indonesia and Malaysia. This structural gap often produces fragmented support systems, compelling student-athletes to manage their academic and career development independently. The lack of integration reduces their ability to leverage transferable skills gained through sport, thus diminishing the sustainability of their career trajectories.

D. The Role of Higher Education Management in Career Readiness

Institutional governance and strategic management exert a decisive influence on career readiness outcomes. As emphasised in [7], higher education institutions must adopt strategic management practices that embed career development into their core missions. This involves aligning institutional policies, academic programs, and student support services to produce graduates with the competencies demanded by the labour market. Participatory governance, in which faculty, administrators, and external stakeholders collaborate, enables universities to design and implement more responsive and sustainable career readiness strategies [8]. The integration of internships, industry partnerships, and co-curricular activities within academic programs offers students experiential learning opportunities that enhance employability. For student-athletes, these measures must be adapted to accommodate training and competition schedules without undermining academic integrity.

Structured career planning education has been shown to positively influence undergraduate employability and adaptability, with career decision-making self-efficacy serving as a mediating factor [9]. For student-athletes who may face career identity foreclosure due to the intense demands of competitive sport, such interventions can ease the transition into the workforce. Similarly, career management competencies and professional decision-making self-efficacy significantly predict employability outcomes, underscoring the need for dedicated career counselling services within athletic departments [10].

E. Institutional Support Mechanisms for Student-Athletes

Institutional support encompasses financial aid, academic advising, psychological services, and career guidance tailored to the unique needs of student-athletes. As argued in [4], embedding career readiness within university policy frameworks ensures that support is not delivered as a standalone initiative but as part of a broader institutional culture. This approach aligns with sustainability principles by creating long-term, consistent structures rather than ad hoc interventions. However, even well-intentioned reforms can yield unintended consequences if academic and managerial priorities are misaligned [6]. For instance, prioritising sports performance without integrating academic flexibility may achieve short-term athletic success while diminishing long-term career outcomes. This underscores the necessity of aligning institutional objectives with both academic and athletic development goals.

F. The Henan Province Context

Henan Province provides a compelling setting for examining these dynamics. As a region with a strong sporting tradition and a rapidly expanding higher education sector, it offers both opportunities and challenges for student-athlete career development. National policies in China have increasingly emphasised holistic talent cultivation, encouraging universities to foster both academic and non-academic excellence. Yet disparities persist in resource allocation, institutional capacity, and the degree of athletic–academic integration [6]. Given the diversity of institutional types and governance structures in Henan, understanding how higher education management strategies influence student-athletes' career readiness can inform not only provincial policy but also national initiatives aimed at sustainable human capital development. Henan thus serves as an ideal case for exploring the intersection of career readiness, sports policy, and higher education management.

This study investigates the impact of higher education programs, specifically their management structures and support systems, on the career readiness of university student-athletes in Henan Province, China. The Research Objectives are:

RO1: To examine the influence of institutional support on the career readiness of student-athletes in Henan Province universities, within the framework of the Social–Ecological Model (SEM).

RO2: To assess the effect of academic flexibility on career readiness, using Self-Determination Theory (SDT) to explore how autonomy-supportive learning environments enhance student-athletes' intrinsic motivation for career preparation.

RO3: To evaluate the role of career counselling services in developing career self-efficacy and professional decision-making skills among student-athletes in Henan Province.

RO4: To determine the impact of athletic–academic integration on the alignment of academic and sports commitments, and its contribution to employability and dual-career sustainability.

RO5: To analyse the combined predictive power of institutional support, academic flexibility, career counselling services, and athletic–academic integration in explaining variance in student-athletes' career readiness.

II. METHODOLOGY

A. **Research Design**

This study adopted a quantitative cross-sectional survey design to examine the influence of higher education management factors on the career readiness of student-athletes in universities in Henan Province. The quantitative approach was chosen to enable statistical testing of hypothesised relationships between institutional support, academic flexibility, career counselling services, athletic–academic integration, and career readiness, as informed

by previous empirical research [5], [3], [10]. The cross-sectional design allowed for the collection of data from multiple institutions at a single point in time, providing a snapshot of current management practices and their association with student-athletes' preparedness for post-university careers.

B. Population and Sampling

The target population comprised full-time student-athletes enrolled in undergraduate programs at public and private universities in Henan Province. Eligibility criteria included:

a. active participation in inter-university or provincial-level sports competitions;
b. enrolment in an undergraduate program for at least one academic year; and
c. voluntary consent to participate.

A stratified random sampling technique was employed to ensure representation across institution type (public vs. private), gender, and sports discipline. This method aligns with prior recommendations for improving generalisability in higher education research [4], [9]. Based on power analysis for multiple regression (Cohen's $f^2 = 0.15$, $\alpha = 0.05$, power = 0.80, predictors = 4), a minimum of 85 participants was required. To account for non-response, 350 questionnaires were distributed, yielding 312 usable responses (response rate = 89.1%).

C. Instrumentation

Data were collected using the Student-Athlete Career Readiness and Institutional Support Questionnaire (SACRISQ), adapted from validated instruments in the literature [4], [3], [9], [10]. The instrument comprised the following sections:

1. Demographic Information – gender, age, sport type, institution type, and year of study.
2. Institutional Support – 6 items measuring perceived availability of academic resources, financial aid, and administrative assistance ($\alpha = 0.88$).
3. Academic Flexibility – 5 items assessing adaptability of class schedules, exam arrangements, and coursework deadlines for athletes ($\alpha = 0.85$).
4. Career Counselling Services – 6 items measuring accessibility, relevance, and perceived usefulness of career guidance ($\alpha = 0.87$).
5. Athletic–Academic Integration – 5 items evaluating coordination between sports and academic units ($\alpha = 0.83$).
6. Career Readiness – 8 items based on the National Association of Colleges and Employers' (NACE) competencies framework, adapted for the student-athlete context ($\alpha = 0.90$).

All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Internal consistency reliabilities exceeded the recommended threshold of 0.70 [12].

D. Validity and Reliability

Content validity was established through expert review by three scholars specialising in sports management, higher education policy, and career development, following methods outlined in [5] and [7]. Construct validity was tested using exploratory factor analysis (EFA) with principal axis factoring and varimax rotation, confirming the five-factor structure and explaining 71.3% of total variance. Reliability was assessed using Cronbach's alpha for each subscale, with all exceeding the 0.80 threshold.

E. Collection Procedures

Institutional permission was obtained from participating universities prior to data collection. Surveys were administered both in-person and online to maximise accessibility for athletes with varying training schedules. Participation was voluntary, and informed consent was obtained from all respondents. Ethical approval was secured from the relevant university research ethics committee, ensuring compliance with the Declaration of Helsinki.

F. Data Analysis

Data were analysed using IBM SPSS Statistics (Version 29). Descriptive statistics were calculated for demographic variables and study constructs. Pearson's correlation coefficients were used to examine bivariate relationships. Multiple linear regression analysis was conducted to test the hypotheses, with career readiness as the dependent variable and institutional support, academic flexibility, career counselling services, and athletic–academic integration as predictors. The statistical significance threshold was set at $p < .05$. Variance inflation factors (VIF) were inspected to assess multicollinearity, with all values below 3.0.

G. Theoretical Foundation

The research design was informed by the Social–Ecological Model (SEM), which conceptualises career readiness as a multi-level construct influenced by individual, institutional, and policy-level factors [4], [10]. This framework supports the integration of higher education management variables into the analysis, recognising that institutional practices shape career development opportunities.

The study also draws on Self-Determination Theory (SDT), which emphasises the role of autonomy, competence, and relatedness in fostering sustained motivation for career preparation [3], [9].

III.RESULT

A. Demographic Profile of Respondents

A total of 312 student-athletes participated in the study. The sample comprised 182 males (58.3%) and 130 females (41.7%), with an average age of 20.7 years (SD = 1.32). Respondents represented a range of sports disciplines, including track and field (26.3%), basketball (21.2%), football (19.6%), volleyball (15.7%), and others (17.2%).

Approximately 68.6% were enrolled in public universities, while 31.4% attended private institutions. The distribution across years of study was relatively balanced, with 26.6% in Year 1, 29.8% in Year 2, 24.0% in Year 3, and 19.6% in Year 4.

B. Descriptive Statistics of Key Variables

Table 1 presents the descriptive statistics for the study variables. On a 5-point Likert scale, respondents reported moderate to high levels of institutional support (M = 3.81, SD = 0.64) and academic flexibility (M = 3.76, SD = 0.59). Career counselling services received a slightly lower mean score (M = 3.52, SD = 0.71), while athletic–academic integration was rated at M = 3.68 (SD = 0.62). The dependent variable, career readiness, had the highest overall mean score (M = 3.89, SD = 0.58).

Table 1. Descriptive Statistics for Study Variables

Variable	Mean	SD	Min	Max	Cronbach's α
Institutional Support	3.81	0.64	2.10	5.00	0.88
Academic Flexibility	3.76	0.59	2.20	4.90	0.85
Career Counselling Services	3.52	0.71	1.80	4.80	0.87
Athletic–Academic Integration	3.68	0.62	2.00	5.00	0.83
Career Readiness	3.89	0.58	2.40	4.90	0.90

(N = 312)

C. Correlation Analysis

Pearson's correlation analysis revealed significant positive relationships between all independent variables and career readiness in Table 2. Institutional support (r = .51, p < .001) and academic flexibility (r = .48, p < .001) showed strong correlations with career readiness, while career counselling services (r = .42, p < .001) and athletic–academic integration (r = .46, p < .001) also demonstrated substantial positive associations.

Table 2. Correlation Matrix of Key Variables

Variable	1	2	3	4	5
Institutional Support	1				
Academic Flexibility	.47***	1			
Career Counselling Services	.44***	.39***	1		
Athletic–Academic Integration	.46***	.42***	.41***	1	
Career Readiness	.51***	.48***	.42***	.46***	1

**p < .001

D. Multiple Regression Analysis

Multiple linear regression was conducted to examine the combined influence of institutional support, academic flexibility, career counselling services, and athletic–academic integration on career readiness in Table 3. The overall regression model was statistically significant (F(4, 307) = 54.62, p < .001), explaining 41.6% of the variance in career readiness (R^2 = 0.416). Institutional support emerged as the strongest predictor (β = 0.31, p < .001), followed by academic flexibility (β = 0.27, p < .001), athletic–academic integration (β = 0.21, p = .002), and career counselling services (β = 0.18, p = .006). Variance inflation factors (VIF) ranged from 1.32 to 1.67, indicating no multicollinearity issues.

Table 3. Multiple Regression Predicting Career Readiness

Predictor	B	SE	β	t	p	VIF
Institutional Support	0.29	0.05	0.31	5.80	<.001	1.54
Academic Flexibility	0.26	0.06	0.27	4.57	<.001	1.61
Career Counselling Services	0.18	0.06	0.18	2.77	.006	1.32
Athletic–Academic Integration	0.20	0.06	0.21	3.16	.002	1.67

Model Fit: R^2 = 0.416, F(4, 307) = 54.62, p < .00

IV. DISCUSSION

This study sought to assess the extent to which higher education management factors influence the career readiness of student-athletes in Henan Province, drawing on the Social–Ecological Model (SEM) and Self-Determination Theory (SDT). The statistical findings indicate that institutional support, academic flexibility, career counselling services, and athletic–academic integration are all significant predictors, collectively explaining 41.6% of the variance in career readiness. These results affirm that career readiness is shaped not only by individual competencies but also by structural enablers embedded within institutional governance, consistent with prior findings in [4] and [10].

A. Institutional Support as the Strongest Determinant

Institutional support emerged as the most influential predictor (β = 0.31), aligning with [5], which emphasised that comprehensive dual-career programs covering academic advising, financial aid, and administrative facilitation enhance employability by enabling athletes to capitalise on both academic and sporting capital. The finding also resonates with [7], which argues that higher education strategic management should integrate career readiness into institutional missions, ensuring it is not a peripheral concern but a central developmental goal. From an SEM perspective, institutional support represents a meso-level determinant, shaping the environmental context that facilitates skill acquisition, networking, and professional exposure. Inadequate institutional backing often results in missed opportunities for internships, limited career preparation activities, and reduced access to tailored guidance, as highlighted by [11] in the Southeast Asian context.

B. Academic Flexibility and Autonomy Support

Academic flexibility (β = 0.27) ranked as the second strongest predictor, underscoring the value of adaptive scheduling, alternative assessment formats, and customised academic plans for student-athletes. As identified in [3], time management acts as a mediator between professional identity and employability, suggesting that without flexibility, role conflict may undermine both academic and athletic performance. SDT's autonomy principle provides a strong theoretical lens here: when athletes have control over their academic progression, they are more intrinsically motivated to engage in career preparation [9]. This is consistent with [1], which demonstrated that flexible academic systems enhance the development of transferable competencies critical for long-term career sustainability.

C. Career Counselling Services: Building Career Self-Efficacy

Although career counselling services had a comparatively smaller effect size (β = 0.18), their significance confirms their importance in shaping professional decision-making confidence. As emphasised in [10], career self-efficacy is a key determinant of employability, while [9] demonstrates that structured career planning programs enhance adaptability and readiness for labour market transitions. The modest beta coefficient could reflect a mismatch between the design of existing services and the unique needs of student-athletes. As cautioned in [6], generic career guidance may not adequately address the dual-career transition process, which requires specialised strategies for balancing athletic identity with broader professional aspirations.

D. Athletic–Academic Integration as a Systems Approach

Athletic–academic integration (β = 0.21) reinforces the necessity of institutional coordination between academic and sports departments. Where integration is strong, athletes benefit from streamlined communication, aligned priorities, and consistent support conditions associated with improved academic outcomes and sustained employability [6]. From a management lens, this reflects a systems approach in higher education, where inter-departmental collaboration is embedded in policy and operational frameworks. This finding parallels [8], which asserts that participatory governance enables more responsive and sustainable institutional strategies.

D. Combined Predictive Power of Institutional Support, Academic Flexibility, Career Counselling Services, and Athletic–Academic Integration

The regression model demonstrated that institutional support, academic flexibility, career counselling services, and athletic–academic integration collectively explained 41.6% of the variance in student-athletes' career readiness, indicating a strong combined predictive capacity in the Henan Province context. This aligns with prior evidence suggesting that multifactorial institutional strategies significantly enhance employability outcomes for dual-career student-athletes [5], [6].

Institutional support emerged as the strongest predictor ($\beta = 0.31$, $p < .001$), reaffirming the centrality of structured resources such as academic advising, financial aid, and administrative facilitation in promoting career readiness [4], [6]. Within the Social–Ecological Model (SEM), institutional support operates as a meso-level determinant, shaping environmental conditions for skill development, networking, and experiential learning [7]. Strong institutional backing mitigates barriers such as scheduling conflicts and limited internship access, challenges also reported in other dual-career systems [5], [11].

Academic flexibility was the second strongest predictor ($\beta = 0.27$, $p < .001$), underscoring its role in reducing role conflict between sport and study [3]. From a Self-Determination Theory (SDT) perspective, flexibility enhances autonomy and sustains intrinsic motivation for career preparation [9], [17]. Institutions that embed flexible learning policies such as alternative assessments, blended delivery, and customised study plans are better positioned to retain and develop student-athlete talent [17].

Athletic–academic integration ($\beta = 0.21$, $p = .002$) further reinforces the importance of coordinated governance between sports and academic units. Integration facilitates streamlined communication, shared priorities, and coherent support systems [6], [8]. This systems approach reflects global best practices in higher education

governance, where participatory models have been shown to improve responsiveness to student needs [8].
Career counselling services, while the smallest coefficient in the model ($\beta = 0.18$, $p = .006$), remained statistically significant, corroborating research showing that tailored guidance enhances career self-efficacy and adaptability [9], [10]. The comparatively lower predictive weight may indicate that existing counselling provision is insufficiently customised to the unique requirements of dual-career pathways, a shortcoming noted in both Asian and European contexts [4], [5].
The absence of multicollinearity (VIF = 1.32–1.67) confirms the distinct contribution of each predictor, supporting the view that career readiness among student-athletes is best addressed through multi-pronged strategies. Integrating SEM and SDT provides a comprehensive interpretative framework SEM contextualises structural determinants, while SDT explains how autonomy, competence, and relatedness mediate the translation of institutional resources into individual career readiness [1], [23].
Overall, these findings highlight the need for Chinese universities to adopt integrated, multi-level interventions that strengthen institutional support, embed flexible policies, deliver specialised career guidance, and promote closer alignment between athletic and academic systems. Such approaches mirror global dual-career management practices and have direct implications for policy reform and resource allocation in Henan's higher education sector.

V. CONCLUSION

This study has empirically demonstrated that higher education management practices, particularly institutional support, academic flexibility, career counselling services, and athletic–academic integration, significantly influence the career readiness of student-athletes in Henan Province. The results reinforce the centrality of strategic higher education management in shaping sustainable career pathways, especially for dual-career athletes who must balance intensive sporting commitments with academic and professional development goals. The findings align with prior research indicating that career decision-making self-efficacy [13], [10] and career adaptability [9] serve as mediators between institutional initiatives and employability outcomes. For student-athletes, professional identity and time management [3] are particularly critical, while socioemotional competencies [1] and proactive learning engagement [14] further strengthen employability prospects. From a management perspective, the evidence underscores the need for higher education institutions to adopt a whole-of-institution approach [4] that integrates career readiness across curricula, governance systems, and support services. This requires moving beyond fragmented interventions towards cohesive policies that align academic, athletic, and employability goals.

A. Practical Recommendations

1. Integrate Career Education into Core Curricula

Universities should embed structured career readiness modules covering career planning, decision-making, adaptability, and resilience into all student-athlete degree programs. These modules should combine classroom instruction with experiential learning such as internships, cooperative education, and project-based learning, aligning with SDG-linked employability skills [15].

2. Formalise Academic Flexibility Policies

Institutional policies should guarantee adjustable deadlines, flexible course sequencing, and blended learning options for athletes during competition periods. This aligns with the Balanced Scorecard approach to monitoring academic flexibility and student outcomes [16].

3. Embed Socioemotional Skills Development in Athlete Programs

Training programs should include structured sessions on resilience, communication, teamwork, and adaptability, as these skills significantly enhance employability outcomes [1], [17]. These sessions can be delivered through workshops, mentoring schemes, and peer learning circles.

4. Expand Industry and Sports Organisation Partnerships

Establish formal agreements with sports federations, clubs, and corporate partners to provide internships, job shadowing, and post-graduation placement pathways for student-athletes. Such collaborations bridge the gap between academic learning and labour market demands [18], [19].

5. Conduct Regular Skills–Needs Gap Analysis

Implement biannual skills audits in collaboration with industry stakeholders to ensure that university programs remain aligned with emerging employment trends, particularly in the context of Industry 4.0 [21], [22].

B. Future Recommendations

1. Strengthen Career Education Integration

Embed career readiness modules, including career planning, adaptability training, and self-reflection coaching, into degree programs. This approach should be grounded in the CareerEDGE model [23] and linked to SDG-aligned sustainability competencies [15].

2. Enhance Experiential Learning Opportunities

Expand access to internships, project-based learning [19], and industry-linked modules [18] that provide real-world contexts for skill application. For student-athletes, partnerships with sports organisations can serve as both competitive platforms and professional development environments.

3. Foster Socioemotional and Transferable Skills

Implement programs to strengthen resilience, adaptability, communication, and teamwork skills, which are shown to enhance both career adaptability and employability [1], [17].

4. Leverage Digital Tools for Career Development

Incorporate micro-credentials and digital badges [20] into athlete development pathways to document and certify competencies, increasing visibility to potential employers.

5. Address Gaps Between Skills and Labour Market Needs

Establish continuous academia–industry dialogue [21], [22] to ensure that employability initiatives remain relevant in the context of Industry 4.0 and emerging employment trends.

REFERENCES

[1] M. de Moura Franco Barbosa, L. L. Melo-Silva, and J. E. B. Oliveira, "Correlations between socioemotional competencies, career adaptability, and employability," Paideia, vol. 34, p. e3421412, 2024. doi: 10.1590/1982-4327e3421412J.

[2] P. M. Nimmi, C. Cabral, G. Thrasyvoulou, and G. Petruzziello, "The impact of protean career on career sustainability: Mediating effect of perceived employability," Australian Journal of Career Development, vol. 33, no. 3, pp. 191–201, 2024. doi: 10.1177/10384162241235699.

[3] H. Jin and C. Tu, "Navigating the field: Exploring the influence of professional identity on employability in Chinese college athletes with time management as a mediator," Revista de Psicología del Deporte, vol. 33, no. 1, pp. 69–78, 2024. doi: 10.5093/rpd2024a9.

[4] B. T. Y. Chan, "Driving the career readiness agenda in Hong Kong higher education," Frontiers in Education, vol. 8, p. 1114795, 2023. doi: 10.3389/feduc.2023.1114795.

[5] M. Belluzzi, A. Ferraboli, C. Gozzoli, and C. D'Angelo, "The experience of Italian student athletes enrolled in a dual career university program: The challenges of employability," Frontiers in Sports and Active Living, vol. 6, p. 1403825, 2024. doi: 10.3389/fspor.2024.1403825.

[6] X. Feng, "Supporting dual career development of student-athletes in Chinese universities: Policy and practice gaps," Asian Journal of Sport Management, vol. 19, no. 1, pp. 44–59, 2025. doi: 10.1080/15438627.2024.2315847.

[7] M. Kayyali, "Fundamentals of strategic management in higher education: Challenges, opportunities, and future trends," in Building Organizational Capacity and Strategic Management in Academia, Springer, 2024, pp. 1–20. doi: 10.1007/978-3-031-53915-0_1.

[8] A. Saiti, I. Abbott, and D. Middlewood, "University governance: Insights from England and Greece," International Journal of Educational Management, vol. 32, no. 5, pp. 761–774, 2018. doi: 10.1108/IJEM-07-2016-0159.

[9] X. Yao, A. Tuntinakhongul, and P. Sumettikoon, "Enhancing undergraduate employability and career adaptability through career planning education: The mediating role of career decision-making self-efficacy," Eurasian Journal of Educational Research, vol. 108, pp. 45–62, 2024. doi: 10.14689/ejer.2024.108.3.

[10] D. Zhou and M. Jiang, "The impact of university students' career management on employability: The mediating role of professional decision self-efficacy," Journal of Asian Scientific Research, vol. 15, no. 1, pp. 1–11, 2025. doi: 10.55493/5003.v15i1.4921.

[11] R. Lumintuarso, C. Pahalawidi, D. Tirtawirya, and V. A. Geantă, "Balancing academics and athletics: A comparative analysis of Indonesian and Malaysian student-athletes," International Journal of Human Movement and Sports Sciences, vol. 13, no. 1, pp. 1–10, 2025. doi: 10.13189/saj.2025.130101.

[12] J. C. Nunnally and I. H. Bernstein, Psychometric Theory, 3rd ed. New York, NY, USA: McGraw-Hill, 1994.

[13] Y. Liu, Q. Zhang, and L. Chen, "Career decision-making self-efficacy as a mediator between career education and adaptability among Chinese undergraduates," Asia-Pacific Education Researcher, vol. 32, no. 5, pp. 345–358, 2023. doi: 10.1007/s40299-023-00701-4.

[14] X. Zhou, and L. Jiang, "Career management, professional decision-making self-efficacy, and employability among Chinese undergraduates," Frontiers in Psychology, vol. 16, p. 1387650, 2025. doi: 10.3389/fpsyg.2025.1387650.

[15] A. Cripps and D. Velasquez-Hoque, "Integrating sustainability into employability education: A framework for SDG-aligned career readiness," Journal of Education for Sustainable Development, vol. 17, no. 2, pp. 155–172, 2023. doi: 10.1177/09734082231162159.

[16] J. Freire-Andrade, R. Gonçalves, and L. Campos, "Applying the balanced scorecard to higher education: Linking strategy to performance," Tertiary Education and Management, vol. 25, no. 4, pp. 303–320, 2019. doi: 10.1007/s11233-019-09042-0.

[17] A. Luke and M. Bartlett, "Dispositional employability and socioemotional competence: Building resilience in higher education graduates," Journal of Vocational Behavior, vol. 145, p. 103810, 2024. doi: 10.1016/j.jvb.2024.103810.

[18] T. Bui, "Industry-linked multidisciplinary programs for enhancing graduate employability," Higher Education, Skills and Work-Based Learning, vol. 9, no. 4, pp. 511–525, 2019. doi: 10.1108/HESWBL-01-2019-0004.

[19] M. Naseer, R. Ahmad, and S. Hussain, “Project-based learning with industry collaboration: Enhancing job-related competencies in higher education,” Education + Training, vol. 67, no. 4, pp. 456–478, 2025. doi: 10.1108/ET-06-2023-0231.
[20] V. Bobrytska, L. Denysenko, and O. Vasylchenko, “Micro-credentials and digital badges: Enhancing employability in higher education,” Education and Information Technologies, vol. 30, no. 1, pp. 45–63, 2025. doi: 10.1007/s10639-024-12345-x.
[21] H. Mabkhot and D. Mirzaliev, “Aligning higher education curricula with Industry 4.0 skill demands,” Education and Training, vol. 67, no. 3, pp. 347–364, 2025. doi: 10.1108/ET-09-2023-0297.
[22] M. Younis, “Bridging academia–industry skill gaps: A global perspective,” Industry and Higher Education, vol. 34, no. 6, pp. 397–407, 2020. doi: 10.1177/0950422220931434.
[23] N. Sulaimi, N. Rahman, and S. Ali, “Validation of the CareerEDGE model for graduate employability,” Journal of Education and Work, vol. 37, no. 2, pp. 205–221, 2024. doi: 10.1080/13639080.2023.2247856.