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AI-Driven Career Planning Tools and Students' Career Decision-Making Outcomes in Chinese Private Colleges

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Abstract

Artificial intelligence (AI) technologies are increasingly used in higher education to support students' career planning and decision-making processes. In Chinese private colleges, where access to traditional career counseling resources is often limited, AI-driven career planning tools have become important digital support systems for students. However, existing studies have mainly focused on technology adoption and user acceptance, while limited attention has been given to whether AI-driven systems improve students' career decision-making outcomes. Therefore, this study aims to identify the effects of AI-driven career planning tools on students' career decision-making outcomes and discuss the implications of AI-supported career planning systems in Chinese private colleges. This study employed a quantitative cross-sectional survey design using a structured questionnaire consisting of four sections and 27 items measured using a five-point Likert scale. A total of 350 valid responses were obtained from undergraduate students in five private colleges in Shaanxi Province, China, using stratified random sampling. Guided by Decision-Making Theory and technology-enhanced learning perspectives, online and printed questionnaires were distributed to respondents, and the collected data were analyzed using SPSS 29.0, Pearson correlation analysis, and multiple regression analysis. The findings indicate that AI-driven career planning tools significantly improve students' career clarity, decision confidence, and decision-making efficiency. The results further suggest that AI-supported systems help students make more structured and effective career-related decisions. This study contributes to the growing literature on artificial intelligence in higher education by shifting the focus from technology adoption toward career decision-making outcomes. Future studies are recommended to

examine additional psychological, ethical, and contextual variables influencing AI-supported career decision-making across different higher education environments and cultural settings.
Keywords: Artificial Intelligence, Career Planning, Career Decision-Making, Decision-Making Outcomes, Higher Education

Introduction

Career decision-making has become increasingly complex for university students due to rapid labor market transformation, technological disruption, and growing uncertainty regarding future employment opportunities. In higher education environments, students are frequently required to process large volumes of career-related information while simultaneously evaluating personal interests, labor market expectations, and professional development opportunities. As a result, artificial intelligence (AI)-driven career planning systems have increasingly emerged as important digital support tools that provide personalized recommendations, intelligent decision support, and adaptive career guidance for students in higher education environments (Holmes et al., 2025). Compared with traditional career counseling approaches, Zawacki-Richter et al. (2025) argued that AI-supported systems improve career decision-making efficiency by analyzing educational and employment-related data to generate personalized recommendations. Likewise, Haidar et al. (2026) emphasized that intelligent educational technologies strengthen adaptive decision-support mechanisms in higher education environments. However, while Zawacki-Richter et al. (2025) primarily emphasized system efficiency, Lim et al. (2025) focused more on adaptive technological mechanisms with relatively limited discussion regarding students' long-term career decision-making outcomes. These differences may result from variations in research focus and institutional context across higher education environments, particularly regarding students' access to individualized career counseling and digital learning support. However, Chen et al. (2024) mainly emphasized cognitive processing efficiency, whereas Crompton et al. (2023) focused more on personalized learning interaction rather than students' actual long-term career decision-making outcomes in higher education environments. The growing importance of AI-supported career planning technologies has become particularly significant in Chinese private colleges, where institutional career counseling resources are often relatively limited. Consequently, many students increasingly rely on AI-driven technologies to support career exploration and improve career-related decision-making processes in highly competitive employment environments, particularly within resource-constrained higher education institutions (Bond et al., 2024).

Tlili et al. (2023) emphasized that existing AI-related educational research has primarily concentrated on technology adoption, AI literacy, and behavioral intention toward intelligent educational systems, while relatively limited attention has been devoted to whether AI-supported systems genuinely improve students' actual career decision-making outcomes. Similarly, Ng et al. (2023) argued that perceived usefulness and technological trust significantly influence students' acceptance of AI-supported educational technologies; however, their study mainly focused on technology adoption behavior rather than students' cognitive and psychological career decision-making outcomes. This limitation is particularly important within Chinese private colleges, where institutional career counseling resources and individualized professional guidance services are often relatively limited, causing many students to rely heavily on AI-driven career planning systems when evaluating career alternatives and employment opportunities. Although Bond et al. (2024) and Holmes et al. (2025) suggested that AI-supported educational technologies improve educational

accessibility and informational support, their findings remain inconclusive regarding whether these systems genuinely strengthen students' career clarity, decision confidence, and decision-making efficiency. Furthermore, Kasneci et al. (2023) cautioned that excessive dependence on AI-generated recommendations may weaken students' autonomous judgment and critical evaluation ability during career planning processes, whereas Siau and Wang (2024) emphasized that AI systems may simultaneously improve decision-making efficiency and create overreliance on algorithmic recommendations. One possible explanation for these inconsistent findings is that most existing studies continue to prioritize technological functionality and system usability rather than examining students' cognitive and psychological career decision-making outcomes within AI-supported educational environments. Therefore, additional empirical investigation remains necessary to clarify how AI-driven career planning systems influence career clarity, decision confidence, and decision-making efficiency among undergraduate students in Chinese private colleges. This issue has become increasingly important because ineffective career-related decision-making may negatively influence students' employability preparedness and long-term career adaptability within rapidly evolving digital labor market environments.

Literature Review

AI-Driven Career Planning Tools in Higher Education

Artificial intelligence (AI)-driven career planning tools have increasingly become important components of digital educational support systems in higher education environments. Dwivedi et al. (2023) explained that AI-supported educational systems utilize predictive analytics and intelligent recommendation mechanisms to improve personalized career guidance services. Relatedly, Hwang et al. (2023) emphasized that machine learning technologies strengthen adaptive decision-support processes within higher education environments. Crompton et al. (2023) further argued that AI-driven educational systems improve students' access to real-time labor market information and educational resources. However, Lim et al. (2025) cautioned that the effectiveness of AI-supported systems may differ according to students' technological readiness and digital literacy levels. Compared with traditional career counseling approaches, Chen et al. (2024) argued that AI-supported systems are capable of processing large volumes of educational and employment-related data to generate individualized recommendations aligned with students' academic backgrounds and professional interests. Likewise, Holmes et al. (2025) emphasized that intelligent educational technologies strengthen personalized educational support by adapting recommendations according to students' professional interests and learning characteristics. These contrasting findings suggest that the effectiveness of AI-supported career planning systems remains theoretically and empirically complex within higher education environments. In higher education environments, AI-supported career guidance systems are increasingly recognized as important educational support mechanisms that strengthen students' cognitive processing and improve career-related decision-making efficiency through adaptive recommendation systems and intelligent feedback processes.

However, despite the growing implementation of AI-supported career planning systems, existing studies remain divided regarding their actual effectiveness in improving students' long-term career-related decision-making outcomes. Kasneci et al. (2023) cautioned that excessive dependence on AI-generated recommendations may weaken students' autonomous exploration behavior in higher education environments. In addition, Tlili et al.

(2023) emphasized that algorithmic recommendation systems may reduce students' critical evaluation ability during educational decision-making processes. Siau and Wang (2024) further argued that technological dependency and limited transparency remain important ethical concerns in AI-supported educational systems. Likewise, Rizun et al. (2026) and Chan et al. (2026) highlighted that students with limited digital literacy may experience difficulties critically interpreting AI-generated recommendations. Despite the efficiency advantages of AI-supported educational systems, concerns regarding technological dependency, ethical governance, and reduced critical judgment continue to challenge their implementation within higher education environments. Furthermore, concerns regarding algorithmic transparency, data privacy, and technological dependency continue to challenge the implementation of AI-supported systems in higher education environments. Ng et al. (2023) primarily focused on AI literacy, behavioral intention, and technology adoption in educational environments, while Holmes et al. (2025) and Tlili et al. (2025) emphasized system usability, personalized learning interaction, and the growing role of AI-supported educational environments in higher education. However, both studies paid relatively limited attention to whether AI-driven career planning systems genuinely improve students' actual career-related decision-making outcomes. Consequently, there is a need for more outcome-oriented research examining how AI-supported career planning systems influence students' cognitive and psychological career decision-making processes within higher education contexts. Moreover, recent studies increasingly emphasize that AI-supported educational technologies should not merely be evaluated according to technological functionality and recommendation accuracy. Although Ng et al. (2023) emphasized that AI literacy significantly improves students' ability to utilize intelligent educational technologies effectively, Siau and Wang (2024) argued that technological trust and algorithmic transparency may be equally important in shaping students' interpretation of AI-generated recommendations. Similarly, Lim et al. (2025) reported that the effectiveness of AI-supported career planning systems is strongly influenced by students' digital literacy and technological readiness. These findings collectively suggest that the effectiveness of AI-supported career guidance systems may depend not only on technological functionality but also on students' cognitive preparedness and institutional learning environments. One possible explanation for these inconsistent findings is that students across different higher education contexts demonstrate varying levels of technological familiarity and independent learning ability. Although previous studies by Holmes et al. (2025) and Seo et al. (2025) emphasized the technological advantages of AI-supported educational systems, relatively limited attention has been devoted to examining how students cognitively interpret and psychologically respond to AI-generated career recommendations. Furthermore, existing findings remain inconsistent regarding whether AI-supported systems strengthen long-term autonomous decision-making ability or merely improve short-term recommendation efficiency. These unresolved theoretical and empirical inconsistencies indicate the need for additional research examining the actual educational and psychological outcomes of AI-supported career planning systems within higher education environments.

Career Decision-Making Outcomes in AI Contexts

Career decision-making is a multidimensional process involving cognitive evaluation, information processing, psychological readiness, and behavioral judgment. Ng et al. (2023) argued that effective career decision-making improves students' ability to identify clearer professional goals and strengthen employability preparation. Similarly, Chatterjee et al.

(2023) found that decision confidence significantly influences students' willingness to evaluate career alternatives systematically. Huang and Rust (2023) further emphasized that intelligent educational systems improve information-processing efficiency during career planning activities. However, Seo et al. (2025) cautioned that technological support alone may not guarantee long-term decision quality without sufficient critical evaluation ability among students. In AI-supported educational environments, intelligent career planning systems increasingly function as cognitive support tools that assist students in processing complex career-related information and evaluating professional alternatives more systematically. Bond et al. (2024) argued that AI-supported educational systems improve students' ability to organize career-related information through adaptive recommendation mechanisms and intelligent feedback processes. Furthermore, Lim et al. (2025) reported that AI technologies strengthen personalized educational support and improve students' ability to identify clearer professional directions. In contrast, Rizun et al. (2026) cautioned that overreliance on AI-generated recommendations may weaken students' autonomous judgment and independent decision-making ability in educational environments. Likewise, Holmes et al. (2025) emphasized that the effectiveness of AI-supported systems may vary significantly according to students' digital literacy and technological readiness. Bond et al. (2024) argued that AI-supported educational systems strengthen students' cognitive processing by improving information organization and adaptive recommendation mechanisms. Furthermore, Lim et al. (2025) reported that intelligent educational technologies improve students' ability to identify clearer professional directions during career planning activities. However, Rizun et al. (2026) cautioned that overreliance on AI-generated recommendations may weaken students' autonomous judgment and independent evaluation ability. Although AI-supported systems improve decision-making quality and information accessibility, concerns regarding technological dependency and reduced independent judgment remain important considerations within higher education career planning environments.

Despite these advantages, findings regarding the relationship between AI-supported systems and career decision-making outcomes remain inconsistent across educational contexts. While Kasneci et al. (2023) argued that AI-generated recommendations may oversimplify complex career-related decision-making processes and reduce students' independent exploration behavior, Siau and Wang (2024) emphasized that excessive dependence on intelligent recommendation systems may weaken students' critical thinking ability and autonomous judgment. These contrasting perspectives suggest that AI-supported systems may simultaneously improve decision-making efficiency while also increasing the risk of technological dependency. One possible explanation is that students with limited critical evaluation skills may become overly reliant on AI-generated recommendations, particularly within resource-constrained educational environments where individualized counseling support is limited. Tlili et al. (2023) further emphasized that algorithmic recommendations may unintentionally encourage passive information acceptance among university students. Likewise, Rizun et al. (2026) reported that students with limited digital literacy may experience difficulties critically evaluating AI-generated recommendations within higher education environments.

These findings indicate that although AI-supported systems improve decision-making efficiency and information accessibility, concerns regarding technological dependency and

reduced independent evaluation ability remain important challenges in higher education environments. Although Bond et al. (2024) argued that AI-supported educational systems improve students' ability to organize career-related information and strengthen professional decision-making processes, Rizun et al. (2026) cautioned that excessive dependence on AI-generated recommendations may weaken students' autonomous judgment and independent evaluation ability. Similarly, Siau and Wang (2024) emphasized that concerns regarding technological trust, transparency, and digital literacy continue to influence students' ability to critically interpret AI-generated recommendations in higher education environments. Furthermore, existing studies remain heavily focused on technological functionality and recommendation efficiency while paying relatively limited attention to students' cognitive interpretation processes and psychological readiness during AI-supported career decision-making activities. Existing findings also remain fragmented regarding how AI-driven career planning systems influence specific dimensions of career decision-making outcomes, particularly career clarity, decision confidence, and decision-making efficiency within private higher education environments. Therefore, additional empirical investigation remains necessary to clarify how AI-supported career planning systems influence students' cognitive and psychological career decision-making outcomes in Chinese private colleges.

Furthermore, the effectiveness of AI-supported career planning systems may also differ according to institutional resources, technological infrastructure, and students' educational backgrounds. In resource-constrained higher education environments, AI-supported technologies may provide substantial benefits by compensating for limited access to individualized career counseling services and professional mentoring opportunities. Kasneci et al. (2023) cautioned that excessive dependence on intelligent recommendation systems may unintentionally weaken students' autonomous exploration behavior and independent information-seeking ability during long-term career planning activities. Similarly, Rizun et al. (2026) argued that students who rely heavily on AI-generated recommendations may gradually reduce their critical evaluation ability and professional self-reflection processes. These findings indicate that AI-supported educational systems should complement rather than replace students' independent career exploration and analytical decision-making behavior. Therefore, higher education institutions should balance technological efficiency with educational strategies that continue strengthening students' autonomous decision-making and analytical skills.

Decision-Making Theory in AI-Supported Educational Environments

Decision-Making Theory provides an important theoretical foundation for understanding how individuals process information, evaluate alternatives, and make judgments within complex educational and technological environments. In higher education contexts, students are frequently required to make career-related decisions under conditions characterized by uncertainty, information overload, and rapidly changing labor market expectations. Similarly, Huang and Rust (2023) emphasized that intelligent systems reduce information complexity and strengthen decision-support mechanisms in educational environments. However, Kasneci et al. (2023) cautioned that excessive dependence on AI-generated recommendations may reduce students' autonomous evaluation ability and independent exploration behavior. From the perspective of Decision-Making Theory introduced by Simon (1977), structured information processing improves individuals' ability to evaluate alternatives efficiently by reducing cognitive burden and simplifying complex information

environments. Dwivedi et al. (2023) argued that AI-supported educational systems strengthen decision-making efficiency by organizing large volumes of educational and career-related information systematically. Similarly, Alharbi (2026) emphasized that AI-supported decision-making systems improve students' ability to process career-related information and strengthen educational guidance efficiency within higher education environments. Similarly, Huang and Rust (2023) emphasized that intelligent systems improve decision-support processes by reducing information complexity in educational environments. However, Kasneci et al. (2023) cautioned that excessive dependence on AI-generated recommendations may weaken students' autonomous evaluation ability and independent exploration behavior. These contrasting findings suggest that although AI-supported systems improve decision-making efficiency by reducing information complexity and cognitive burden, they may simultaneously weaken students' autonomous evaluation ability when excessive reliance on algorithmic recommendations occurs. One possible explanation for this contradiction is that students with lower levels of digital literacy and critical thinking ability may depend more heavily on AI-generated guidance during career-related decision-making processes.

Kasneci et al. (2023) argued that AI-supported educational environments improve information accessibility and recommendation efficiency by helping students process complex educational and career-related information more systematically. Similarly, Tlili et al. (2023) emphasized that intelligent recommendation systems strengthen adaptive learning support and improve decision-making efficiency within higher education environments. However, Siau and Wang (2024) cautioned that excessive dependence on AI-generated recommendations may weaken students' independent evaluation ability and increase technological dependency during career-related decision-making processes. Rizun et al. (2026) further argued that concerns regarding algorithmic transparency, ethical governance, and technological trust continue to challenge the implementation of AI-supported educational systems across higher education environments. Tlili et al. (2023) emphasized that intelligent recommendation systems improve adaptive learning support and strengthen decision-making efficiency within higher education environments. In contrast, Siau and Wang (2024) cautioned that excessive dependence on AI-generated recommendations may increase technological dependency and weaken students' independent evaluation ability. Rizun et al. (2026) further argued that concerns regarding algorithmic transparency and ethical governance continue to challenge the implementation of AI-supported educational systems. These findings indicate that although AI-supported systems strengthen decision-making efficiency by reducing information complexity and cognitive burden, concerns regarding technological dependency, algorithmic transparency, and reduced independent evaluation ability remain unresolved within higher education environments. These inconsistent findings may be explained by differences in institutional technological support, students' digital literacy levels, and the extent to which students critically evaluate AI-generated recommendations during career-related decision-making activities.

Furthermore, existing studies remain fragmented regarding whether AI-supported systems genuinely strengthen students' long-term cognitive development or merely improve short-term recommendation efficiency. While Holmes et al. (2025) emphasized the educational benefits of intelligent recommendation systems in supporting personalized learning experiences, Rizun et al. (2026) cautioned that students with limited digital literacy and

technological familiarity may experience difficulties critically interpreting AI-generated recommendations. One possible explanation for these inconsistent findings is that institutional technological infrastructure and students' digital literacy levels vary significantly across higher education environments. This limitation is particularly important in Chinese private colleges, where unequal access to educational resources and individualized counseling services may influence students' reliance on AI-supported career planning systems. Furthermore, existing literature remains heavily focused on technological efficiency and recommendation accuracy while paying relatively limited attention to students' cognitive and psychological experiences during AI-supported career decision-making processes. Therefore, additional empirical investigation remains necessary to examine how AI-supported career planning systems influence career clarity, decision confidence, and decision-making efficiency among undergraduate students in Chinese private colleges.

Overall, existing literature has predominantly focused on technology adoption, system usability, and behavioral intention toward AI-supported educational technologies. Although several studies emphasized the efficiency and personalization advantages of AI-supported systems, inconsistent findings remain regarding whether these technologies genuinely improve students' long-term career decision-making outcomes. Furthermore, relatively limited attention has been devoted to examining students' cognitive and psychological experiences within AI-supported career planning environments, particularly in Chinese private colleges characterized by limited counseling resources and unequal technological accessibility. Therefore, this study seeks to address these theoretical and empirical gaps by examining how AI-driven career planning systems influence students' career clarity, decision confidence, and decision-making efficiency in Chinese private colleges.

Research Objectives

The primary objectives of this study are as follows:

RO1: To identify the effects of AI-driven career planning tools on students' career decision-making outcomes in Chinese private colleges.

RO2: To discuss the implications of AI-driven career planning tools for students' career decision-making outcomes in Chinese private colleges.

Based on the literature review and research gaps identified above, this study aims to examine the effects of AI-driven career planning tools on students' career decision-making outcomes in Chinese private colleges. The study further discusses how AI-supported systems influence career clarity, decision confidence, and decision-making efficiency within private higher education environments. The findings are expected to provide empirical evidence regarding the effectiveness of AI-supported career planning systems and offer practical and theoretical implications for improving intelligent career guidance services in higher education institutions.

Research Hypothesis

Based on the research objectives, the following hypotheses are proposed:

H1: AI-driven career planning tools have a significant positive effect on students' career clarity.

H2: AI-driven career planning tools have a significant positive effect on students' decision confidence.

H3: AI-driven career planning tools have a significant positive effect on students' decision-making efficiency.

Methodology

This study employed a quantitative cross-sectional survey design to examine the effects of AI-driven career planning tools on students' career decision-making outcomes in Chinese private colleges. The study was guided by Decision-Making Theory introduced by Simon (1977) together with recent perspectives on AI-supported learning and intelligent educational technologies to explain how AI-supported educational systems influence students' cognitive processing and career-related decision-making outcomes within higher education environments.The population consisted of undergraduate students enrolled in five private colleges in Shaanxi Province, China, namely Haojing College of Shaanxi University of Science and Technology, Xi'an Eurasia University, Xi'an International University, Xi'an Fanyi University, and Xi'an Peihua University. A stratified random sampling technique was employed to ensure proportional representation across gender, academic year, and field of study. A total of 380 questionnaires were distributed, and 350 valid responses were retained for final analysis, representing a response rate of 92.1%.

Data were collected using a structured questionnaire consisting of four sections and 27 items measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Section A collected respondents' demographic information, while Section B measured career clarity, Section C examined decision confidence, and Section D assessed decision-making efficiency in AI-supported career planning environments. Career clarity items were adapted from the Career Decision-Making Difficulties Questionnaire (CDDQ) developed by Gati, Krausz, and Gati et al. (1996). Decision confidence items were adapted from the Career Decision Self-Efficacy Scale–Short Form (CDSE-SF) developed by Betz, Klein, and Betz et al. (1996), while decision-making efficiency items were adapted from Scott and Bruce's (1995) decision-making style scale. Ng et al. (2023) validated the applicability of these instruments in AI-supported educational environments, while Holmes et al. (2025) further confirmed their reliability in technology-supported career decision-making contexts within higher education institutions. Minor wording modifications were conducted to ensure contextual suitability for AI-supported career planning environments in Chinese private colleges.

Prior to actual data collection, the questionnaire was reviewed by experts in educational technology and higher education studies to ensure content validity. A pilot study involving 30 undergraduate students was subsequently conducted, and all constructs recorded Cronbach's alpha coefficients above the recommended threshold value of 0.70, indicating satisfactory reliability. Data collection was conducted between January and March 2026 using both online and printed questionnaires. Respondents participated voluntarily, and all responses were treated anonymously for academic research purposes. Data analysis was conducted using SPSS 29.0. Descriptive statistics, Pearson correlation analysis, and multiple regression analysis were employed to examine the relationships between AI-driven career planning tools and students' career decision-making outcomes.

Results and Discussion

Demographic Profile of Respondents

This section presents the demographic characteristics of the respondents involved in the study. A total of 350 valid responses were collected from undergraduate students enrolled in five private colleges in Shaanxi Province, China. The demographic analysis included gender, academic year, and field of study. The demographic information was considered important because students from different educational backgrounds may demonstrate varying levels of exposure to AI-driven educational technologies and career planning systems.

Table 1
Demographic Profile of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	168	48
	Female	182	52
Academic Year	Year 1	74	21.1
	Year 2	92	26.3
	Year 3	108	30.9
	Year 4	76	21.7
Field of Study	Engineering	102	29.1
	Management	96	27.4
	Humanities	78	22.3
	Other Disciplines	74	21.2

Table 1 shows that female respondents represented the largest proportion of the sample, accounting for 52.0% of the respondents, while male respondents accounted for 48.0%. In terms of academic year, Year 3 students represented the highest proportion of respondents (30.9%), followed by Year 2 students (26.3%). The findings suggest that students from intermediate academic levels demonstrated relatively greater participation in the study, possibly because they were more actively engaged in career planning and employability preparation activities during their university studies.

Regarding field of study, engineering students represented the largest proportion of respondents (29.1%), followed by management students (27.4%). Students from humanities and other related disciplines also participated in the study, thereby ensuring diversity within the sample population. The demographic diversity of the respondents strengthened the representativeness of the study and provided broader insights into students' perceptions regarding AI-driven career planning tools in Chinese private colleges.

Relationship Between AI-Driven Career Planning Tools and Career Clarity

This section discusses the influence of AI-driven career planning tools on students' career clarity in Chinese private colleges. Career clarity refers to students' ability to identify clear career goals, understand future professional directions, and evaluate career opportunities systematically. Regression analysis was conducted to examine the predictive relationship between AI-driven career planning tools and students' career clarity.

Table 2
Regression Analysis of AI-Driven Career Planning Tools on Career Clarity

Variables	Beta	t-value	Sig.
Career Clarity	0.681	12.542	0

Table 2 shows that AI-driven career planning tools had a significant positive effect on students' career clarity ($\beta = 0.681$, $p < 0.001$). The findings indicate that AI-supported career planning systems help students organize career-related information more effectively and reduce uncertainty regarding future professional pathways. The results suggest that intelligent recommendation systems assist students in identifying clearer career directions and understanding employment opportunities within rapidly changing labor market environments.

The findings are consistent with Holmes, Miao, and Gašević (2025), who argued that AI-supported educational systems improve students' ability to process career-related information through adaptive recommendation mechanisms and intelligent feedback systems. However, Kasneci et al. (2023) cautioned that excessive dependence on AI-generated recommendations may weaken students' independent career exploration behavior and autonomous evaluation ability during career planning activities. One possible explanation is that students in Chinese private colleges often face limited access to individualized counseling services and professional mentoring opportunities, thereby making AI-supported systems more beneficial and practically relevant within private higher education contexts characterized by limited counseling support. Similarly, Holmes et al. (2025) reported that AI-supported technologies strengthen students' ability to identify career opportunities and evaluate professional alternatives more systematically. From the perspective of Decision-Making Theory, the findings suggest that students develop clearer professional goals when information complexity and uncertainty are reduced through intelligent decision-support systems. Although previous studies caution that excessive dependence on AI-generated recommendations may weaken independent judgment and autonomous exploration behavior (Kasneci et al., 2023), the present findings indicate that AI-driven career planning systems generally improve career clarity among undergraduate students in Chinese private colleges. Therefore, H1 was supported.

In Chinese private colleges, intelligent career guidance technologies may therefore function not only as educational support systems but also as strategic employability development mechanisms that assist students in adapting to increasingly digitalized employment environments. Furthermore, the findings indicate that AI-supported career guidance systems may reduce students' psychological uncertainty during career planning processes by providing more organized and accessible professional information. Consequently, universities should prioritize developing more adaptive and student-centered AI-supported career guidance systems capable of improving students' career readiness and professional adaptability within rapidly changing digital employment environments.

Relationship Between AI-Driven Career Planning Tools and Decision Confidence

This section examines the influence of AI-driven career planning tools on students' decision confidence. Decision confidence refers to students' confidence in evaluating career alternatives and making career-related decisions within educational and professional

planning environments. Regression analysis was conducted to determine whether AI-supported career planning systems significantly influence students' confidence during career decision-making processes.

Table 3
Regression Analysis of AI-Driven Career Planning Tools on Decision Confidence

Variables	Beta	t-value	Sig.
Decision Confidence	0.647	11.836	0

Table 3 indicates that AI-driven career planning tools had a significant positive effect on students' decision confidence ($\beta = 0.647$, $p < 0.001$). The findings demonstrate that AI-supported systems improve students' confidence by providing structured information, personalized recommendations, and adaptive career guidance within complex educational and employment environments. Students become more confident when AI-supported systems simplify information evaluation processes and provide clearer interpretations regarding labor market expectations and professional opportunities.

The findings are aligned with Molnar, and Kertesz (2026), who reported that AI-supported educational environments significantly improve students' confidence in evaluating educational and career alternatives through personalized recommendation systems. Huang and Rust (2023) additionally argued that intelligent systems strengthen users' confidence by reducing information complexity and improving decision-support mechanisms. Recent studies on AI-supported learning environments further suggest that digital educational technologies improve students' learning experiences and cognitive interaction processes through adaptive and interactive educational environments. However, Rizun et al. (2026) cautioned that students with limited technological familiarity may experience difficulties critically evaluating AI-generated recommendations, thereby affecting confidence in certain educational contexts. Nevertheless, the present findings indicate that AI-driven career planning systems generally strengthen students' decision confidence in Chinese private colleges. Therefore, H2 was supported.

The findings additionally indicate that AI-supported career planning systems may strengthen students' psychological readiness during career-related decision-making processes by reducing uncertainty and improving access to organized professional information. In increasingly competitive labor market environments, intelligent educational technologies may therefore function as important psychological and cognitive support mechanisms for undergraduate students. Furthermore, AI-supported career guidance systems may assist students in developing stronger confidence when evaluating professional alternatives and future employment opportunities within rapidly changing digital economies. Consequently, higher education institutions should continue strengthening the integration of AI-supported technologies into student career counseling services to improve students' confidence, employability preparation, and long-term career adaptability.

Relationship Between AI-Driven Career Planning Tools and Decision-Making Efficiency
This section discusses the influence of AI-driven career planning tools on students' decision-making efficiency. Decision-making efficiency refers to students' ability to make timely, organized, and effective career-related decisions. Regression analysis was conducted to

examine the predictive relationship between AI-supported career planning systems and students' decision-making efficiency.

Table 4
Regression Analysis of AI-Driven Career Planning Tools on Decision-Making Efficiency

Variables	Beta	t-value	Sig.
Decision-Making Efficiency	0.703	13.214	0

Table 4 shows that AI-driven career planning tools had a significant positive effect on students' decision-making efficiency ($\beta = 0.703$, $p < 0.001$). Among the three dimensions examined in this study, decision-making efficiency recorded the strongest predictive relationship with AI-driven career planning tools. The findings indicate that AI-supported systems help students reduce the time required to search for career-related information, compare professional alternatives more effectively, and make more organized career-related decisions.

The findings are supported by Chatterjee et al. (2023), who emphasized that AI-supported educational systems improve efficiency by generating adaptive recommendations and reducing cognitive overload during information evaluation processes. Similarly, Tlili et al. (2023) reported that AI-supported systems improve educational decision-making processes by enhancing accessibility to educational information and supporting more structured evaluation processes within digital learning environments. Ng et al. (2023) additionally argued that AI literacy and intelligent educational technologies improve students' ability to utilize digital resources efficiently during educational and career planning activities. Although AI-supported systems significantly improved decision-making efficiency, concerns remain regarding whether improved efficiency necessarily leads to better long-term career decisions. From the perspective of Decision-Making Theory, organized information processing significantly improves individuals' ability to evaluate alternatives efficiently and make timely decisions under conditions involving uncertainty and information complexity. AI-supported career planning systems therefore reduce cognitive burden by filtering irrelevant information and generating adaptive recommendations aligned with students' educational and professional needs. Although Siau and Wang (2024) argued that excessive dependence on AI-supported systems may reduce critical evaluation ability and independent information-seeking behavior, the present findings demonstrate that AI-driven career planning systems generally improve students' decision-making efficiency in Chinese private higher education environments. Therefore, H3 was supported.

The findings additionally imply that AI-driven career planning systems may become increasingly important in higher education environments characterized by rapidly changing labor market demands and limited access to individualized career counseling services. Furthermore, AI-supported career planning systems may significantly improve students' ability to manage career-related information more efficiently within digitally transformed educational environments. Students are increasingly required to evaluate large volumes of educational, occupational, and labor market information during career planning processes. Intelligent recommendation systems may therefore reduce cognitive overload and strengthen students' ability to identify suitable professional opportunities more systematically and efficiently. These findings further indicate that AI-supported educational

technologies may become important strategic mechanisms for strengthening graduate employability and career adaptability in technology-driven economies.

Overall, the findings of this study demonstrate that AI-driven career planning tools significantly improve students' career decision-making outcomes in Chinese private colleges. The results indicate that AI-supported systems strengthen career clarity, increase decision confidence, and improve decision-making efficiency by helping students process career-related information in a more organized and structured manner. Unlike previous studies that primarily focused on technology adoption and user acceptance, the present study provides empirical evidence regarding the effectiveness of AI-driven systems in improving students' career-related decision-making outcomes. From the perspective of Decision-Making Theory, the findings suggest that structured information processing and reduced uncertainty improve students' ability to evaluate professional alternatives and make clearer career-related decisions. The findings also support recent perspectives on AI-supported learning and intelligent educational technologies, which explains how intelligent educational technologies improve learning interaction, cognitive support, and educational experiences within digital environments (Holmes et al., 2025). Therefore, higher education institutions should not only expand the implementation of AI-driven career guidance systems but also improve students' ability to utilize these technologies effectively during career planning processes. Overall, this study contributes to the growing literature on artificial intelligence in higher education by providing practical and theoretical insights into how AI-supported systems influence students' career decision-making outcomes in private higher education environments.

Summary of Results

The findings of this study demonstrated that AI-driven career planning tools had significant positive effects on students' career decision-making outcomes in Chinese private colleges. Specifically, AI-supported systems significantly improved career clarity, decision confidence, and decision-making efficiency among undergraduate students. The findings indicate that AI-driven systems help students organize career-related information more effectively, reduce uncertainty during career planning processes, and improve the efficiency of evaluating professional alternatives. The findings support Decision-Making Theory introduced by Simon (1977), which explains that structured information processing improves individuals' ability to evaluate alternatives and make clearer decisions under conditions involving uncertainty and information complexity. The findings further suggest that AI-supported systems reduce cognitive burden and strengthen students' ability to organize career-related information more systematically within technology-supported educational environments. These findings are generally consistent with Holmes et al. (2025) and Haidar et al. (2026), who emphasized that AI-supported educational systems improve students' ability to process career-related information through adaptive recommendation mechanisms and intelligent feedback systems. However, the present findings differ from studies such as Tlili et al. (2023), which cautioned that excessive dependence on AI-generated recommendations may weaken students' autonomous judgment and critical evaluation ability. One possible explanation for these differences is that students in Chinese private colleges may rely more heavily on AI-supported systems because of limited access to individualized career counseling services and institutional career guidance resources. Similarly, Chatterjee et al. (2023) and Huang and Rust (2023) emphasized that AI-supported technologies strengthen decision quality and improve

efficiency by simplifying information evaluation processes and providing structured decision-support environments.

From a broader educational perspective, the findings demonstrate that AI-supported career planning systems strengthen cognitive interaction, information organization, and adaptive educational support processes within digital higher education environments. Decision-Making Theory (Simon, 1977) explains that individuals develop clearer and more effective decisions when information complexity and uncertainty are reduced through structured information processing mechanisms. Meanwhile, recent studies on AI-supported learning environments emphasize that intelligent educational technologies improve cognitive interaction, personalized learning experiences, and educational support processes within digital learning environments. In the present study, AI-driven career planning systems improved students' ability to evaluate career alternatives, identify professional directions, and make more organized career-related decisions. Therefore, AI-supported career planning systems significantly enhanced students' cognitive support and educational decision-making experiences in Chinese private colleges.

Furthermore, all hypotheses proposed in this study were supported, indicating that AI-driven career planning systems significantly influence students' cognitive and psychological career decision-making outcomes in Chinese private colleges. Specifically, the findings related to career clarity supported H1, indicating that AI-supported systems strengthen students' career goal identification and professional direction awareness. The findings related to decision confidence supported H2, demonstrating that AI-supported systems improve students' confidence during career-related decision-making processes by reducing uncertainty and improving structured information evaluation. In addition, the findings related to decision-making efficiency supported H3, confirming that AI-supported systems help students process career-related information more effectively and make more organized professional decisions. The findings additionally address the existing research gap identified in previous studies by shifting analytical attention from technology adoption and behavioral intention toward actual career-related decision-making outcomes in higher education environments. These differences may reflect the tendency of earlier studies to prioritize technological functionality and system usability while paying relatively limited attention to students' cognitive and psychological experiences during AI-supported career planning activities.

At the same time, the findings also highlight the importance of balancing technological efficiency with students' independent critical judgment to prevent excessive dependence on AI-generated recommendations during long-term career planning activities. Unlike previous studies that primarily emphasized system usability and technological acceptance, the present findings demonstrate how AI-supported educational technologies influence students' cognitive processing, psychological confidence, and career-related evaluation ability within digitally transformed educational environments. Consequently, the findings provide important theoretical and practical implications for universities, educational policymakers, and developers of intelligent educational technologies seeking to improve AI-supported career guidance systems in higher education institutions.

Conclusion

This study demonstrated that AI-driven career planning tools significantly improve students' career decision-making outcomes in Chinese private colleges by enhancing career clarity, strengthening decision confidence, and improving decision-making efficiency. The findings indicate that AI-supported systems help students process career-related information more systematically, reduce uncertainty during career planning processes, and make more structured and effective professional decisions within increasingly competitive employment environments. From a theoretical perspective, the study extends Decision-Making Theory and recent perspectives on AI-supported educational technologies by providing empirical evidence that intelligent educational technologies improve cognitive support, information processing, and educational decision-making experiences in higher education contexts. Practically, the findings benefit undergraduate students by providing insights into how AI-supported systems can strengthen career planning and employability preparation, while higher education institutions and educators may utilize the findings to improve AI-driven career guidance services and personalized educational support systems. The findings may additionally assist policymakers and educational administrators in developing more effective AI-supported career guidance strategies capable of improving workforce readiness and educational competitiveness within digital learning environments. Therefore, higher education institutions should not only expand the implementation of AI-driven career guidance systems but also strengthen students' digital literacy and critical evaluation ability to ensure the responsible and effective integration of artificial intelligence into higher education career guidance practices. The study also highlights the importance of balancing technological innovation with ethical responsibility in AI-supported educational environments. Although intelligent educational technologies provide substantial opportunities for improving career-related decision-making processes, concerns regarding algorithmic transparency, data privacy, technological dependence, and unequal digital accessibility remain important challenges in higher education environments. Therefore, future studies should continue examining the long-term psychological, educational, and ethical implications of AI-supported career planning systems across different cultural and institutional contexts. Future research may additionally examine how cultural background, technological familiarity, and psychological readiness influence students' perceptions and utilization of AI-supported career guidance technologies across different higher education contexts.

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