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ARTICLE

DEVELOPING COMPETITIVE INTELLIGENCE CAPABILITIES THROUGH PROJECT MANAGEMENT TRAINING: A STRUCTURAL MODEL FOR FUTURE SKILLS AND EMPLOYABILITY

DESENVOLVIMENTO DE COMPETÊNCIAS EM INTELIGÊNCIA COMPETITIVA ATRAVÉS DA FORMAÇÃO EM GESTÃO DE PROJETOS: UM MODELO ESTRUTURAL PARA AS COMPETÊNCIAS FUTURAS E A EMPREGABILIDADE

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ABSTRACT

Purpose: This study aims to develop and validate a Competitive Intelligence (CI) oriented competency model by positioning project management (PM) training as a mechanism to enhance workforce intelligence capabilities, particularly in addressing the global skills mismatch crisis.

Methodology/approach: The study adopts a mixed-methods design conducted in Shaanxi Province, China. Data were collected through interviews, surveys (n = 380), expert validation, and a quasi-experimental intervention (n = 30). The conceptual framework integrates Project Management, Social Cognitive Career Theory (SCCT), and Self-Determination Theory (SDT). Confirmatory Factor Analysis (CFA) was used to validate the measurement model.

Originality/Relevance: This research introduces a novel CI-oriented competency model that conceptualizes leadership, innovation, and problem-solving as micro-foundations of intelligence capability. It uniquely links project management training with the development of strategic intelligence skills, addressing employability challenges in dynamic work environments.

Key findings: The findings identify significant gaps in leadership, innovation, and problem solving competencies, indicating deficiencies in intelligence readiness. Following a PM-based training intervention, substantial improvements were observed (Δ = 1.08–1.37; Cohen's d = 1.931–2.456). Structural analysis confirms that these competencies significantly enhance employability by strengthening decision intelligence.

Theoretical/methodological contributions: The study advances a human capital driven CI capability framework by integrating PM, SCCT, and SDT. Methodologically, it demonstrates the effectiveness of combining CFA with quasi experimental design to validate competency development models and provides a scalable approach for embedding intelligence-oriented training in higher education.

Keywords: Competitive Intelligence. Project Management Training. Future Skills. Intelligence Capability Development. Employability.

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RESUMO

Objetivo: Este estudo tem como objetivo desenvolver e validar um modelo de competências orientado à Inteligência Competitiva (IC), posicionando o treinamento em gestão de projetos (GP) como um mecanismo para aprimorar as capacidades de inteligência da força de trabalho, particularmente no enfrentamento da crise global de descompasso de competências.

Metodologia/abordagem: O estudo adota um desenho de métodos mistos realizado na Província de Shaanxi, China. Os dados foram coletados por meio de entrevistas, questionários (n = 380), validação por especialistas e uma intervenção quase experimental (n = 30). O arcabouço conceitual integra Gestão de Projetos, Teoria Social Cognitiva de Carreira (SCCT) e Teoria da Autodeterminação (SDT). A Análise Fatorial Confirmatória (AFC) foi utilizada para validar o modelo de mensuração.

Originalidade/Relevância: Esta pesquisa apresenta um modelo inovador de competências orientado à IC, que conceitualiza liderança, inovação e resolução de problemas como microfundamentos da capacidade de inteligência. O estudo estabelece uma ligação única entre o treinamento em gestão de projetos e o desenvolvimento de competências de inteligência estratégica, abordando desafios de empregabilidade em ambientes de trabalho dinâmicos.

Principais conclusões: Os resultados identificam lacunas significativas nas competências de liderança, inovação e resolução de problemas, indicando deficiências na prontidão para inteligência. Após uma intervenção baseada em treinamento em GP, foram observadas melhorias substanciais (Δ = 1,08–1,37; d de Cohen = 1,931–2,456). A análise estrutural confirma que essas competências aumentam significativamente a empregabilidade ao fortalecer a inteligência decisória.

Contribuições teóricas/metodológicas: O estudo avança um framework de capacidade de IC orientado ao capital humano ao integrar GP, SCCT e SDT. Metodologicamente, demonstra a eficácia da combinação da AFC com desenho quase experimental para validar modelos de desenvolvimento de competências e oferece uma abordagem escalável para incorporar treinamento orientado à inteligência no ensino superior.

Palavras-chave: Inteligência Competitiva. Treinamento em Gestão de Projetos. Competências do Futuro. Desenvolvimento de Capacidades de Inteligência. Empregabilidade.

1 INTRODUCTION

1.1 Research Background

The accelerating transformation toward a knowledge-driven and digital global economy has intensified the demand for talent capable not only of performing technical tasks but also of contributing to organizational competitive intelligence (CI) and strategic decision-making. Across both advanced and transitional economies, the persistent skills mismatch is no longer merely a labour-market inefficiency; rather, it reflects a deeper misalignment between workforce capabilities and the requirements of intelligence-driven competitiveness, including strategic sensing, data interpretation, and adaptive response capabilities.

In China, ongoing industrial upgrading and digital transformation have amplified this challenge. While higher education systems have expanded rapidly, the development of competencies that support intelligence-based organizational performance remains insufficient. Empirical evidence indicates that a significant proportion of graduates lack critical capabilities such as problem-solving, leadership, and innovation, which are essential not only for employability but also for functioning as micro-foundations of competitive intelligence systems. This issue is particularly pronounced in inland regions such as Shaanxi Province, where slower industrial transformation exacerbates the gap between academic training and market intelligence requirements.

Globally, organizations increasingly rely on human capital as a source of strategic intelligence, where employees act as sensors, analysts, and decision contributors within competitive environments. However, existing higher education models remain largely oriented toward knowledge transmission rather than the development of intelligence capabilities, such as environmental scanning, analytical reasoning, and decision intelligence. As a result, graduates are often inadequately prepared to contribute to competitive monitoring systems and strategic organizational processes.

Project management (PM), with its emphasis on structured problem-solving, coordination, risk assessment, and outcome-oriented execution, offers a promising mechanism for bridging this gap. Beyond its traditional operational role, PM can be reconceptualized as a training architecture for developing competitive intelligence capabilities, enabling individuals to engage in systematic information processing, collaborative sensemaking, and adaptive decision-making. Despite this potential, current research predominantly examines PM in relation to skill acquisition and employability, with limited attention to its role in fostering strategic intelligence capability development.

1.2 Research Questions

Although prior studies have explored future skills, employability, and project-based learning, there is a critical gap in understanding how these competencies contribute to the development of competitive intelligence capabilities at the individual and workforce levels. Specifically, the literature lacks empirically validated models that link structured training

interventions to intelligence readiness, strategic sensing, and decision-making capacity, particularly within transitional economic contexts.

To address this gap, the present study is guided by the following research questions:

1. What critical future skill gaps exist among higher education students, and how do these reflect deficiencies in competitive intelligence readiness?

2. How can project management training be theoretically integrated with SCCT and SDT to develop a competitive intelligence-oriented competency model?

3. To what extent does the proposed training model enhance individual-level competitive intelligence capabilities and employability outcomes?

1.2.1 Research Significance

This study aims to develop and empirically validate a competitive intelligence capability development model grounded in project management training. Specifically, it seeks to:

Identify key competency gaps and reinterpret them as deficits in strategic intelligence capability

Construct an integrated PM–SCCT–SDT framework that explains how training interventions enhance intelligence-related competencies

Evaluate the effectiveness of the model in improving intelligence readiness, decision capability, and employability

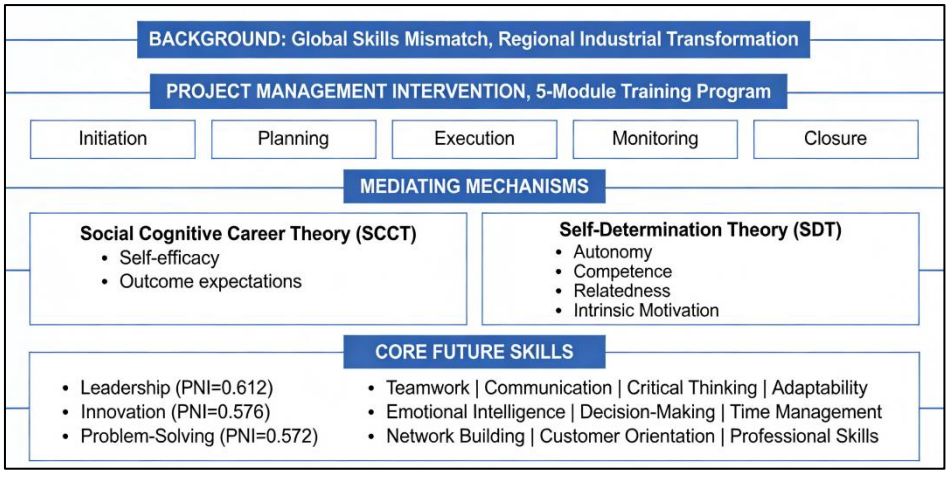

Figure 1: Conceptual Model

2 THEORETICAL FRAMEWORKS

2.1 Core Theoretical Foundations

This study is grounded in an integrated theoretical perspective combining Social Cognitive Career Theory (SCCT), Self-Determination Theory (SDT), and Project

Management (PM) Lifecycle Theory, extended through a Competitive Intelligence (CI) capability lens. While prior research has primarily examined these theories in the context of education and employability, this study reconceptualizes them as mechanisms for developing individual-level competitive intelligence capabilities, including strategic sensing, analytical reasoning, and decision intelligence.

In intelligence-driven environments, human capital functions not merely as a productive resource but as a distributed intelligence system, where individuals contribute to environmental scanning, interpretation of signals, and adaptive decision-making. Accordingly, competency development must be understood as the formation of micro-foundations of competitive intelligence, rather than isolated skill acquisition. Within this framework, SCCT explains the cognitive mechanisms underlying intelligence capability development, SDT explains the motivational conditions that sustain engagement in intelligence-related tasks, and PM Lifecycle Theory provides the structured process through which intelligence capabilities are operationalized in practice.

2.1.1 Social Cognitive Career Theory (SCCT) and Intelligence Capability Development

Social Cognitive Career Theory posits that individual performance and career development are shaped by self-efficacy, outcome expectations, and environmental supports. In the context of competitive intelligence, self-efficacy extends beyond task confidence to encompass confidence in interpreting complex information, identifying patterns, and making strategic decisions under uncertainty.

Project-based training environments provide repeated mastery experiences that enhance individuals' ability to engage in analytical processing and sensemaking, which are central to intelligence work. Through iterative engagement in problem-solving, coordination, and decision-making tasks, individuals develop stronger beliefs in their capacity to generate actionable insights. These enhanced self-efficacy beliefs directly contribute to intelligence readiness, defined as the ability to effectively participate in organizational intelligence processes such as information analysis and strategic evaluation.

Thus, SCCT provides a cognitive explanation of how structured experiential learning contributes to the development of competitive intelligence capabilities at the individual level, linking self-efficacy to analytical performance and decision quality.

2.1.2 Self-Determination Theory (SDT) and Motivational Foundations of Intelligence

Self-Determination Theory explains how intrinsic motivation is sustained through the satisfaction of autonomy, competence, and relatedness. Within a competitive intelligence context, these psychological needs are critical for enabling individuals to actively engage in continuous information processing, collaborative analysis, and adaptive decision-making.

Autonomy supports independent judgment and initiative in interpreting competitive signals. Competence reinforces individuals' confidence in their analytical and problem-solving abilities. Relatedness facilitates knowledge sharing, collaborative intelligence, and

collective sensemaking within teams. Together, these factors create a motivation-driven intelligence environment, where individuals are not only capable of performing tasks but are also intrinsically driven to engage in strategic analysis and decision processes.

In project management-based training, participatory decision-making, iterative feedback, and collaborative project execution create conditions that satisfy these psychological needs. As a result, SDT explains how training interventions foster sustained engagement in intelligence-generating activities, thereby strengthening both individual and collective intelligence capacity.

2.1.3 Project Management Lifecycle as an Intelligence Development Architecture

Project Management Lifecycle Theory provides the procedural foundation for structuring competency development as a systematic intelligence-building process. The five stages initiation, planning, execution, monitoring, and closure can be reinterpreted as phases of the intelligence cycle, including problem identification, information structuring, analysis, evaluation, and learning feedback.

Initiation supports problem framing and identification of strategic information needs.

Planning structures data collection, resource allocation, and analytical approaches.

Execution enables active information processing and solution development.

Monitoring facilitates real-time evaluation, feedback, and adaptive adjustment.

Closure consolidates insights and supports organizational learning.

Through this lens, project management is not merely a pedagogical tool but a practical architecture for operationalizing competitive intelligence processes. It enables individuals to develop capabilities related to structured analysis, risk evaluation, and evidence-based decision-making, which are essential for sustaining competitive advantage.

2.2 Core Theoretical Foundations

Despite the growing importance of Competitive Intelligence in organizational performance, its integration into human capital development remains limited. Traditional CI research has focused on organizational systems, tools, and processes, while largely overlooking the role of individuals as intelligence agents.

This study addresses this gap by conceptualizing future skills such as leadership, innovation, and problem-solving as core dimensions of competitive intelligence capability:

Leadership, Intelligence Readiness (ability to coordinate, interpret, and act on strategic information)

Innovation, Strategic Sensing (ability to identify opportunities and anticipate environmental changes)

Problem-Solving, Analytical Capability (ability to process information and generate solutions)

These competencies collectively contribute to decision intelligence, enabling individuals to transform information into actionable strategies. From a dynamic capabilities

perspective, such intelligence capabilities allow organizations to sense, seize, and transform in response to environmental changes.

2.3 Integrated Competitive Intelligence Capability Model (PM–SCCT–SDT)

Building on the above theoretical foundations, this study proposes an integrated PM, SCCT, SDT, CI model, in which project management training functions as the intervention mechanism, SCCT and SDT explain the underlying cognitive and motivational processes, and competitive intelligence capability represents the key outcome.

The model follows a structured causal pathway:

Project Management Training, Self-Efficacy & Intrinsic Motivation, Competitive Intelligence Capabilities, Employability & Competitive Advantage

Within this framework:

PM provides the operational structure for intelligence development.

SCCT explains how individuals build confidence in analytical and decision-making abilities.

SDT explains how motivation sustains engagement in intelligence-related activities.

CI capabilities represent the strategic outcome, linking individual competencies to organizational competitiveness.

This integrated model advances prior research by shifting the focus from skill development to intelligence capability formation, thereby aligning competency development with the requirements of strategic decision-making and sustainable competitive advantage.

2.4 Competitive Intelligence–Oriented Future Skills Framework

Building on extensive literature synthesis, enterprise interviews, and expert validation, this study develops a multi-dimensional future skills framework, reconceptualized as a Competitive Intelligence (CI) capability system. Rather than treating competencies as isolated attributes, the framework positions them as interdependent micro-foundations of intelligence capability, enabling individuals to contribute to strategic sensing, analytical processing, and decision-making within dynamic environments. Building on extensive literature synthesis, enterprise interviews, and expert validation, this study develops a multi-dimensional future skills framework, reconceptualized as a Competitive Intelligence (CI) capability system. Rather than treating competencies as isolated attributes, the framework positions them as interdependent micro-foundations of intelligence capability, enabling individuals to contribute to strategic sensing, analytical processing, and decision-making within dynamic environments.

The empirical results (Table 1) indicate that all twelve competency dimensions are significantly interrelated ($r = 0.589–0.801$, $p < .01$), suggesting the presence of a coherent intelligence capability structure rather than fragmented skill sets. This reinforces the view that effective competitive intelligence depends on the integration of cognitive, social, and behavioral competencies, rather than single-skill dominance.

Table 1: Competitive Intelligence Oriented Future Skills Framework

Competency Dimension	CI Capability Role	Correlation (r)	Current Mean	Expected Mean	PNI
Teamwork	Collaborative Intelligence	0.782	3.12	4.25	0.521
Problem-Solving	Analytical Capability	0.801	2.75	4.18	0.572
Leadership	Intelligence Readiness	0.765	2.68	4.32	0.612
Emotional Intelligence	Adaptive Intelligence	0.698	2.93	4.06	0.489
Critical Thinking	Analytical Reasoning	0.723	2.87	3.98	0.467
Adaptability	Strategic Flexibility	0.654	3.01	3.92	0.432
Communication	Intelligence Dissemination	0.731	3.05	4.01	0.476
Time Management	Execution Intelligence	0.689	3.15	3.97	0.412
Innovation	Strategic Sensing	0.792	2.71	4.23	0.576
Decision-Making	Decision Intelligence	0.678	2.83	3.89	0.451
Network Building	External Intelligence Access	0.589	2.90	3.85	0.423
Customer Orientation	Market Intelligence Awareness	0.645	3.02	3.93	0.438

Note: PNI (Priority Need Index) = (Expected Score, Current Score)/Expected Score; correlation coefficients are all significant at $p<.01$.

A Priority Need Index (PNI) analysis reveals that leadership (PNI = 0.612), innovation (PNI = 0.576), and problem-solving (PNI = 0.572) represent the most critical gaps. From a Competitive Intelligence perspective, these dimensions correspond to three core intelligence functions.

2.5 Project Management as a Competitive Intelligence Development Mechanism

The application of project management in higher education has traditionally focused on improving practical skills and experiential learning outcomes. However, its potential as a structured mechanism for developing competitive intelligence capabilities remains underexplored.

Existing studies demonstrate that project-based and project management–oriented learning can enhance problem-solving, collaboration, and motivation. Nevertheless, in many educational contexts particularly within transitional economies implementation remains fragmented, characterized by limited instructor capability, superficial curriculum

integration, and weak alignment with industry intelligence needs. As a result, project activities often fail to evolve into systematic intelligence development processes.

3 METHOD

3.1 Research Design

This study adopts a sequential mixed-methods design integrated with a quasi-experimental approach to examine the development of competitive intelligence (CI) capabilities through project management training. The design follows a three-stage analytical framework, ensuring both exploratory depth and causal validation.

Stage 1: Intelligence Needs Assessment

Qualitative interviews and survey data were used to identify competency gaps as deficiencies in competitive intelligence readiness, including analytical capability, strategic sensing, and decision intelligence.

Stage 2: Model Development and Training Intervention

An integrated PM, SCCT, SDT, CI model was constructed, and a five-module training program based on the project management lifecycle was developed as a structured intelligence capability-building intervention.

Stage 3: Empirical Validation

The effectiveness of the model was evaluated through quasi-experimental pretest–posttest design, expert validation causal analysis to test the relationships between training intervention, intelligence capabilities, and employability outcomes.

This design ensures methodological triangulation, enabling the integration of qualitative insights with quantitative validation and strengthening the robustness of findings.

3.2 Participants

The study incorporates a multi-stakeholder sample to capture diverse perspectives on intelligence capability development.

Interview Participants (n = 15):

University educators, undergraduate students, and industry professionals (HR managers and project leaders), providing insights into competency requirements and intelligence expectations.

Survey Participants (n = 300):

Stratified random sampling ensured representation across students, faculty, and industry practitioners, capturing both educational and organizational intelligence needs.

Expert Panel (n = 7):

Specialists in education, project management, and human resource development evaluated the content validity and strategic relevance of the proposed model.

Quasi-Experimental Sample (n = 30):

Undergraduate students without prior formal PM training participated in the intervention to assess changes in intelligence capability indicators.

This multi-layered sampling enhances external validity and contextual relevance, particularly in linking educational outcomes with organizational intelligence demands .

3.3 Instruments and Data Collection

3.3.1 Semi-Structured Interviews

Interviews were conducted to identify intelligence-related competency gaps, focusing on industry expectations, decision-making challenges, and skill deficiencies in real-world contexts. Each session lasted 45–60 minutes and was transcribed for thematic analysis.

3.3.2 Measurement Scale (Questionnaire)

A structured 5-point Likert scale was developed to measure:

Current vs. expected competency levels

Competitive intelligence capability dimensions (e.g., analytical capability, strategic sensing, decision intelligence)

Employability outcomes

The instrument was refined through expert validation and pilot testing to ensure content validity and reliability.

3.3.3 Expert Evaluation

An expert evaluation framework assessed:

Content validity (IOC index)

Alignment with competitive intelligence capability development

Practical feasibility of the training model

3.3.4 Quasi-Experimental Procedure

A pretest–posttest design was implemented:

Pretest: Baseline measurement of CI related competencies

Intervention: Five-module PM-based training program

Posttest: Measurement of changes in intelligence capability

Additionally, a satisfaction survey captured participants' perceptions of the training's effectiveness in enhancing intelligence readiness and decision capability.

3.4 Data Analysis

3.4.1 Qualitative Analysis

Interview data were analysed using thematic coding (open, axial, and selective coding) to extract patterns related to intelligence capability gaps and workforce expectations.

3.4.2 Quantitative Analysis

To ensure methodological rigor, multiple analytical techniques were applied:

Reliability and Validity Testing
- Cronbach's α for internal consistency
- Confirmatory Factor Analysis (CFA) for construct validity
- AVE (> 0.50) and CR (> 0.70) thresholds
- Discriminant validity (Fornell Larcker criterion)

Multicollinearity and Model Diagnostics
- Variance Inflation Factor (VIF < 5)
- Assessment of multivariate normality
- Model fit indices (CFI, TLI, RMSEA)

Skill Gap Measurement
- Priority Need Index (PNI) used to quantify intelligence capability gaps

Quasi-Experimental Analysis
- Paired sample t-test for pretest–posttest comparison
- Effect size estimation using Cohen's d

4 RESULTS AND DISCUSSION

4.1 Measurement Model: Confirmatory Factor Analysis (CFA)

To ensure the robustness of the measurement model, Confirmatory Factor Analysis (CFA) was conducted to validate the latent constructs representing competitive intelligence (CI) capabilities, including analytical capability, strategic sensing, decision intelligence, and collaborative intelligence. The results are presented in Table 2.

Content validity was first established through the Item-Objective Congruence (IOC) index (IOC = 0.871), exceeding the recommended threshold of 0.80, indicating strong alignment between measurement items and the conceptual domain of intelligence capability development. Reliability analysis further demonstrated excellent internal consistency, with Cronbach's α = 0.989, confirming that the scale reliably captures the multidimensional nature of CI-related competencies.

The CFA results indicate a well-fitting measurement model (CFI = 0.942; TLI = 0.935; RMSEA = 0.058), satisfying commonly accepted thresholds. Convergent validity was confirmed, as all factor loadings were significant and exceeded recommended levels, while Average Variance Extracted (AVE > 0.50) and Composite Reliability (CR > 0.70) met established criteria. These results suggest that the observed variables adequately represent their corresponding latent constructs.

Importantly, the validated measurement model supports the conceptualization of future skills as integrated components of competitive intelligence capability, rather than independent competencies. The strong construct validity indicates that the proposed framework effectively captures the underlying structure of intelligence readiness and

decision-making capacity, providing a reliable foundation for subsequent structural analysis.

Table 2: Reliability and Validity Assessment of the Competitive Intelligence Measurement Model

Assessment Category	Indicator	Value	Threshold	Interpretation
Content Validity	IOC	0.871	≥ 0.80	Strong content alignment
Internal Consistency	Cronbach's α	0.989	≥ 0.90	Excellent reliability
Model Fit	CFI	0.942	≥ 0.90	Good model fit
	TLI	0.935	≥ 0.90	Good model fit
	RMSEA	0.058	≤ 0.08	Acceptable fit
Convergent Validity	AVE	> 0.50	≥ 0.50	Adequate convergence
Composite Reliability	CR	> 0.70	≥ 0.70	Satisfactory reliability

4.2 Competitive Intelligence Gap Analysis

Descriptive statistics and Priority Need Index (PNI) results (Table 1) reveal substantial discrepancies between current and expected competency levels. Rather than interpreting these gaps as isolated skill deficiencies, the findings indicate systematic weaknesses in competitive intelligence (CI) capability formation, particularly in areas critical for strategic decision-making and environmental adaptation.

The most pronounced gaps leadership (PNI = 0.612), innovation (PNI = 0.576), and problem-solving (PNI = 0.572) can be reinterpreted as deficiencies in three core intelligence functions:

Leadership, Intelligence Readiness: limited ability to coordinate, interpret, and act upon strategic information

Innovation, Strategic Sensing: weak capability to identify emerging opportunities and anticipate environmental shifts

Problem-Solving, Analytical Capability: insufficient capacity to process complex information and generate actionable insights

These results suggest that students are not only underprepared for employment but also lack the foundational capabilities required to function as intelligence contributors within organizations. The relatively lower gaps observed in competencies such as time management and communication indicate that operational skills are more developed than strategic intelligence capabilities, highlighting a structural imbalance in current educational models.

From a broader perspective, these findings reflect a transition from a skills mismatch problem to an intelligence readiness gap, where the primary challenge lies in preparing graduates to engage in continuous sensing, analysis, and decision-making processes within dynamic competitive environments.

4.3 Path Analysis

The predictive effects of core competencies on employment competitiveness. Path coefficients are reported in Table 3. The model yielded an adjusted R^2 of 0.789 (p<.001), indicating that core competencies explained 78.9% of the variance in employment competitiveness.

Problem-solving (β=0.234), professional skills (β=0.213), and innovation (β=0.201) exerted the strongest positive predictive effects, all significant at the p<.001 level. All competency dimensions showed significant positive paths to employment competitiveness, thereby supporting the core hypotheses of the integrated theoretical model.

Table 3: Path Coefficients for Core Competencies Predicting Employment Competitiveness

Predictor Variable	Path Coefficient (β)	Standard Error (SE)	p-value	Significance
Problem-Solving	0.234	0.042	< .001	**
Professional Skills	0.213	0.039	< .001	**
Innovation	0.201	0.045	< .001	**
Leadership	0.187	0.041	< .001	**
Teamwork	0.165	0.038	< .01	*
Communication	0.152	0.040	< .01	*
Adjusted R^2	0.789	—	< .001	—

Note: *p<.01, **p<.001

4.4 Project Management–Based Competitive Intelligence Training Model and Five-Module Architecture

Building on the project management (PM) lifecycle, this study develops a structured training architecture for competitive intelligence (CI) capability development, in which each module corresponds to a specific phase of the PM process and simultaneously represents a stage in the intelligence cycle. Rather than treating project management as a pedagogical tool alone, the model positions it as an operational mechanism for cultivating intelligence readiness, strategic sensing, and analytical capability (Table 4).

Table 4: Project Management–Based Competitive Intelligence Training Framework

PM Lifecycle Stage	Training Module	Core Cultivated Competencies	Training Duration	Teaching Methods
Initiation	Project Initiation & Role Allocation	Teamwork, Communication, Leadership	8 class hours	Case analysis, role-playing
Planning	Project Planning & Resource Management	Time Management, Decision-Making	10 class hours	Group discussion, plan design
Execution	Project Execution & Coordination	Problem-Solving, Adaptability, Innovation	12 class hours	Practical operation, on-site guidance
Monitoring	Project Monitoring & Progress Management	Critical Thinking, Risk Management	8 class hours	Data analysis, problem feedback
Closure	Project Closure & Customer Interface	Customer Orientation, Communication	6 class hours	Result display, satisfaction survey

The program features clear objectives, structured content, and feasible teaching methods, making it directly applicable to university teaching practice.

4.5 Expert Evaluation of the Competitive Intelligence Training Model

To assess the scientific rigor and practical relevance of the proposed framework, an expert evaluation was conducted involving seven specialists in education, project management, and human resource development. The results indicate a high level of overall validation, with an average scientificity score of 4.53 out of 5, demonstrating strong expert consensus regarding the robustness of the model.

More specifically, the highest ratings were observed for training objectives (4.62/5), training content (4.58/5), and training process design (4.52/5). These results suggest that the model is not only pedagogically sound but also strategically aligned with the requirements of competitive intelligence capability development.

From a Competitive Intelligence perspective, expert feedback confirms that the framework effectively integrates intelligence-oriented competencies such as analytical capability, strategic sensing, and decision-making within a structured training architecture. The strong evaluation of training objectives indicates that the model clearly defines intelligence capability outcomes, while high scores for content and process reflect the coherence between theoretical foundations and practical implementation mechanisms.

5 FINAL CONSIDERATIONS

This study contributes to the Competitive Intelligence (CI) literature by shifting the focus from technology and system-centric perspectives toward a human capital driven intelligence capability framework. Specifically, it conceptualizes future skills such as

leadership, innovation, and problem-solving as micro-foundations of competitive intelligence, directly supporting strategic sensing, analytical processing, and decision-making.

By integrating Project Management, Social Cognitive Career Theory (SCCT), and Self-Determination Theory (SDT), the study introduces a multi-level intelligence capability model, where structured experiential learning functions as a mechanism for developing intelligence readiness and decision intelligence. This extends CI research by demonstrating that intelligence capability is not only embedded in organizational systems but also cultivated through training architectures and behavioral mechanisms.

Furthermore, the study contributes to the emerging domain of workforce intelligence, positioning employability as an outcome of an individual's ability to generate, interpret, and act on strategic information within competitive environments.

This study highlights that sustainable competitiveness increasingly depends on the ability of organizations to leverage distributed intelligence embedded in human capital. The development of competitive intelligence capabilities at the individual level enables organizations to:

Enhance strategic sensing of market and environmental changes

Improve decision quality through analytical reasoning

Strengthen adaptive capacity in uncertain and dynamic contexts

By demonstrating that project management training can systematically build these capabilities, the study provides evidence that education-to-workforce pipelines can be strategically aligned with competitive intelligence systems, thereby supporting long-term organizational resilience and sustainability.

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