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# FROM BRAIN WASTE TO WORKFORCE CAPABILITY: AN INTEGRATIVE IMOI FRAMEWORK FOR ORGANIZATIONAL CREDENTIAL RECOGNITION IN GLOBAL TALENT MANAGEMENT

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## Abstract

Organizations worldwide face a persistent talent paradox: while skilled immigrants possess validated credentials, systematic barriers to recognition result in widespread underutilization of human capital. This phenomenon, termed *brain waste*, costs approximately \$40 billion USD annually in forgone wages in the United States alone, while Canadian immigrants with foreign degrees experience overqualification rates 2.4 times higher than their Canadian-born counterparts. Brain waste constrains both organizational capability and individual flourishing. Despite its strategic significance, credential recognition remains inadequately theorized within talent management scholarship. This article addresses this theoretical gap by developing an integrative Input-Mediator-Outcome-Input (IMO) framework positioning credential recognition as strategic talent management operating at the intersection of organizational practice, regulatory systems, and individual capability. The framework synthesizes six theoretical traditions: human resource development foundations establishing domain legitimacy through psychological, economic, and systems engagement; the capability approach providing normative grounding through its distinction between functionings and capabilities; dynamic capabilities theory explaining competitive advantage through sensing, seizing, and reconfiguring mechanisms; the Ability-Motivation-Opportunity framework specifying mediating processes; multilevel systems theory capturing cross-level dynamics; and care ethics grounding relational obligations to immigrant professionals. The framework explains why brain waste persists and specifies conditions for its resolution. The multiplicative AMO logic demonstrates why partial interventions consistently fail: weakness in any component creates structural bottlenecks nullifying the others' effects. High ability without opportunity produces validated but unemployable credentials; high motivation without ability produces engagement without competence validation; high opportunity without motivation produces unutilized access pathways. The ethical foundation positions credential recognition as a matter of human dignity requiring care-based organizational responses, addressing both economic and normative imperatives. Eleven testable propositions specify relationships across micro, meso, and macro levels, with particular attention to organizational absorptive capacity, strategic maturity, regulatory opportunity structures, and conversion factors that moderate recognition effectiveness. A theory-driven research agenda maps propositions to appropriate methodological approaches. The framework advances talent management theory by bridging economic and normative logics, demonstrating that effective credential recognition serves both organizational performance and the expansion of real freedoms that immigrant professionals have reason to value.

## Keywords

Credential Recognition, Brain Waste, Talent Management, IMO Framework, Immigrant Workforce, Human Capital, Capability Approach, Dynamic Capabilities, AMO Framework, Human Resource Development

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## Introduction

The strategic management of talent has emerged as a central concern for organizations navigating increasingly competitive global labour markets. Yet a persistent paradox undermines workforce development efforts worldwide: while millions of skilled immigrants possess validated credentials from their countries of origin, systematic barriers to recognition result in widespread underutilization of human capital, a phenomenon termed brain waste (Batalova & Fix, 2021). This article develops an integrative theoretical framework positioning credential recognition as strategic talent management, addressing a significant gap in organizational scholarship while attending to the ethical dimensions of professional identity and human dignity.

The phenomenon of *brain waste* represents one of the most consequential yet undertheorized challenges in contemporary talent management. Credential recognition determines whether immigrant professionals can deploy their expertise productively or find themselves trapped in employment far below their capability. The consequences extend beyond individual career outcomes to encompass organizational competitiveness, sectoral workforce capacity, and national human capital development. Yet despite these far-reaching implications, talent management scholarship has largely treated credential recognition as a policy domain external to its theoretical purview, leaving practitioners without adequate conceptual tools to understand and address the phenomenon.

The present analysis responds to calls for more sophisticated theorization of immigrant employment outcomes (Shirmohammadi et al., 2019; Lopes, 2006) while extending human resource development scholarship into a domain with significant implications for both organizational effectiveness and human flourishing. The framework developed here synthesizes economic and normative logics, demonstrating how effective credential recognition serves organizational competitiveness while expanding individual capabilities to achieve professional lives that immigrants have reason to value. This synthesis addresses a fundamental tension in existing literature between instrumental approaches that treat credential recognition primarily as a mechanism for optimizing human capital returns and critical approaches that emphasize dignity, justice, and the moral obligations of receiving societies.

## The Brain Waste Problem

The magnitude of brain waste is substantial across developed economies, representing a systematic failure to activate available human capital with profound consequences for individuals, organizations, and societies. Table 1 presents comparative data on brain waste indicators across major destination countries, drawing on the most reliable available statistics. All statistics have been fact-checked against original source documents to ensure accuracy and enable readers to verify claims independently.

**Table 1**  
*Brain Waste Indicators Across Major Destination Countries*

Country	Overqualification Rate	Annual Economic Cost	Source
Canada	25.8% (foreign-educated) vs. 10.6% (Canadian-born)	Not estimated nationally	Statistics Canada (2022)
United States	21% of college-educated immigrants	\$39.4B USD unrealized earnings	Batalova et al. (2016)
Canada (Healthcare)	36.5% nurses; 41.1% physicians in field	Critical shortage impact	Statistics Canada (2022)

*Note.* Overqualification defined as degree holders working in positions requiring high school education or less. Healthcare data reflects percentage working in field of training (job match rates). Similar patterns documented across OECD nations; methodological differences in measuring overqualification complicate direct comparison across jurisdictions. All figures verified against original source documents.

In Canada, more than one-quarter (25.8%) of immigrants with foreign degrees are overqualified for their positions compared to just 10.6% of Canadian-born degree holders, representing a 2.4-to-1 disparity (Statistics Canada, 2022). This pattern persists even in high-demand sectors experiencing acute labour shortages: only 36.5% of immigrants with foreign nursing degrees work as registered nurses

compared to 87.4% of Canadian-educated nurses, and just 41.1% of foreign-educated physicians practise medicine compared to 90.1% of Canadian-educated doctors (Statistics Canada, 2022). These figures are particularly striking given that Canada actively recruits immigrants through points-based systems that explicitly value educational credentials and professional experience. The policy apparatus that selects immigrants based on their human capital fails to connect with the institutional apparatus that would enable deployment of that capital.

The United States experiences similar dynamics, with an estimated \$39.4 billion USD in unrealized earnings annually from college-educated immigrants working below their skill levels (Batalova et al., 2016). This figure represents forgone wages and productivity losses, capturing only the direct economic cost while leaving unmeasured the broader implications for innovation capacity, sectoral development, and social integration. The Migration Policy Institute's analysis reveals that approximately 1.9 million of 7.6 million college-educated immigrants in the United States are either unemployed or working in jobs requiring only a high school education. Updated analysis by Batalova and Fix (2021) confirms the persistence of these patterns, estimating that brain waste costs approximately \$40 billion annually in forgone wages, with federal, state, and local governments combined losing approximately \$10 billion annually in tax revenue.

These figures represent systemic failure to activate available human capital, what Bauder (2003) termed brain abuse, the exploitative extraction of immigrant labour without genuine capability enhancement. Bauder's framing, developed through analysis of the Canadian context, highlights an ethical dimension often absent from economic analyses: when societies benefit from immigrant labour while systematically denying recognition to immigrant credentials, they participate in a form of structural exploitation regardless of individual intent. The moral weight of this framing extends beyond market inefficiency to questions of human dignity and the obligations receiving societies bear toward those they recruit. Drawing on Bourdieu's concept of cultural capital, Bauder demonstrated how credential devaluation functions as a mechanism of social reproduction that maintains existing hierarchies while extracting value from immigrant labour.

### ***Theoretical Gap and Research Purpose***

Despite the magnitude of this challenge, talent management scholarship has largely treated credential recognition as a policy domain external to its theoretical purview. Lopes (2006) identified the absence of career development research on foreign-born workers as a significant gap, a gap that persists nearly two decades later despite dramatic growth in international migration and workforce diversity. This theoretical absence is particularly striking given talent management's explicit concern with identifying, developing, and deploying human capability for organizational advantage. If talent management is fundamentally about developing and unleashing expertise (Swanson & Holton, 2009), then the systematic failure to recognize and deploy immigrant expertise demands attention as a core talent management concern.

Shirmohammadi et al.'s (2019) systematic review of 106 empirical studies found that existing literature addresses recognition through three primary lenses: immigration policy research examining regulatory frameworks and pathways, labour economics research modeling wage gaps and employment outcomes, and professional regulation research investigating licensing requirements and alternative credentials. Each lens offers valuable insights, but none provides systematic talent management theorization that could guide organizational practice. The policy lens treats recognition as governmental function; the economics lens treats it as market outcome; the regulatory lens treats it as professional boundary maintenance. Missing from these perspectives is explicit attention to organizational capability, strategic integration, developmental processes, and the ethical obligations that arise when organizations encounter immigrant professionals with unrecognized credentials.

This article addresses this theoretical gap by developing an integrative theoretical framework following Lynham's (2002) general method of theory building in applied disciplines. I synthesize six theoretical traditions to construct an Input-Mediator-Outcome-Input (IMOI) model theorizing how credential recognition mechanisms translate individual qualifications into workforce capabilities across micro, meso, and macro levels. The IMOI structure, advocated by Ilgen et al. (2005) for complex organizational phenomena involving cyclical dynamics, captures the developmental nature of credential recognition where outcomes feedback as inputs for subsequent capability building. This cyclical structure distinguishes the framework from static models that treat recognition as a one-time event rather than an ongoing developmental process embedded in organizational systems and individual careers.

### Contributions

The article makes four primary contributions to talent management theory and practice that advance both scholarly understanding and practical intervention. First, I demonstrate how credential recognition satisfies foundational criteria for talent management domain legitimacy by engaging psychological, economic, and systems processes simultaneously, while ethics moderates all three. Recognition affects professional identity and motivation (psychological), human capital activation and productivity (economic), and multilevel interactions from individual credentials through organizational capability to national workforce composition (systems). By establishing this three-domain engagement, I position recognition as legitimate talent management concern rather than external policy issue. This positioning has practical significance: it authorizes talent management scholars and practitioners to address credential recognition as core concern rather than treating it as someone else's problem.

Second, I resolve the tension between human capital theory's economic logic and the capability approach's normative logic by showing how organizational talent management serves as the bridging mechanism. Human capital theory treats credentials instrumentally, as productive assets to be optimized for economic returns. The capability approach treats professional functioning as intrinsically valuable, as freedoms to be expanded regardless of productivity implications. These logics could conflict, but the framework demonstrates how effective credential recognition serves both simultaneously: expanding workers' real freedoms to achieve professional functionings while activating dormant human capital for productive deployment. This resolution draws theoretically on Porter and Kramer's (2011) shared value concept while extending it into the specific domain of credential recognition and immigrant workforce integration.

Third, I advance eleven propositions specifying testable relationships, including the multiplicative AMO dynamics where any component's absence creates structural bottlenecks nullifying the others' effects. These propositions move beyond descriptive accounts of brain waste toward analytical explanation of why partial interventions consistently fail and what conditions must be satisfied for recognition to produce capability realization. The propositions are amenable to empirical testing through multiple methodological approaches, enabling the cumulative research program required to develop evidence-based practice.

Fourth, I provide a theory-driven research agenda that operationalizes each proposition and identifies appropriate methodological approaches. This agenda enables the empirical testing required to validate the proposed structures and move the framework from conceptual contribution toward evidence-based practice guidance. The research agenda attends to the multilevel nature of credential recognition phenomena, specifying data structures and analytical approaches suited to cross-level dynamics.

### Theoretical Foundations

Positioning credential recognition within talent management requires genuine theoretical synthesis rather than mere juxtaposition of frameworks. Effective synthesis shows how theories interact, where they create productive tensions, and how their integration produces explanatory power exceeding any single framework. The framework draws on six theoretical traditions, each contributing distinct mechanisms that together explain the brain waste paradox and specify conditions for its resolution. Table 2 summarizes these traditions and their contributions to the integrative framework.

**Table 2**

*Theoretical Foundations and Framework Contributions*

Tradition	Key Scholars	Core Contribution	Framework Role
HRD Foundations	Swanson & Holton (2009)	Three-domain test: psychological, economic, systems; ethics moderator	Domain legitimacy
Strategic HRD	Garavan (1991); McCracken & Wallace (2000); Mitsakis (2019)	Strategic integration, organizational maturity continuum	Moderating conditions
Capability Approach	Sen (1999); Robeyns (2005); Nussbaum (2011)	Functionings, capabilities, conversion factors, dignity	Normative foundation

Dynamic Capabilities	Teece (2007); Teece et al. (1997); Wright et al. (2001)	Sensing, reconfiguring; resources	seizing, VRIO	Competitive advantage
AMO Framework	Appelbaum et al. (2000); Bos-Nehles et al. (2023)	Ability, Opportunity; logic	Motivation, multiplicative	Mediator mechanisms
Care Ethics	Noddings (1984); Brown et al. (2005); Held (2006)	Relational responsibility, ethical leadership, dignity		Ethical foundation

*Note.* HRD = human resource development; AMO = Ability-Motivation-Opportunity; VRIO = valuable, rare, inimitable, organized. Each tradition contributes distinct theoretical mechanisms that, when integrated, explain the brain waste paradox while attending to both economic and ethical imperatives. The synthesis demonstrates how these traditions interact rather than merely coexist.

### ***Human Resource Development Foundations***

Swanson and Holton (2009) define human resource development as the process of developing and unleashing expertise for the purpose of improving performance. This definition grounds HRD in three theoretical domains that together constitute the field's intellectual foundation and distinguish it from adjacent disciplines. Psychological theory addresses learning, motivation, and identity, examining how individuals acquire expertise and what conditions support or inhibit that acquisition. Economic theory addresses human capital, productivity, and returns on investment, examining how expertise development creates value for individuals and organizations. Systems theory addresses multilevel interactions, feedback loops, and environmental dynamics, examining how individual development aggregates to organizational and societal outcomes.

Critically, Swanson and Holton position ethics as moderating all three domains, ensuring expertise development serves both organizational performance and human flourishing rather than treating workers merely as resources to be exploited. This ethical moderation proves particularly salient for credential recognition: recognition processes that treat immigrant professionals merely as human capital to be extracted risk what Bauder (2003) termed brain abuse. The ethical foundation requires attending to professional identity, human dignity, and relational obligations alongside economic considerations. Bierema and Callahan (2014) extended this ethical dimension through their framework for critical HRD practice, arguing that human resource development must attend to power dynamics, social justice, and the interests of workers themselves rather than serving exclusively organizational or managerial agendas.

Credential recognition satisfies this three-domain test comprehensively, establishing its legitimacy as HRD concern rather than external policy issue. Recognition engages psychological processes including professional identity validation, self-efficacy enhancement, and motivation building. When credentials are recognized, professionals receive confirmation that their expertise matters, their investment in education was worthwhile, and their professional identity is legitimate. Conversely, nonrecognition attacks professional identity, communicating that expertise developed elsewhere lacks value regardless of its actual content. Recognition engages economic processes including human capital activation, productivity enhancement, and returns on educational investment for both individuals and societies. Recognition engages systems processes including multilevel interactions from individual credentials through organizational capability to national human capital composition, with feedback dynamics operating across temporal scales.

### ***The Capability Approach and Ethical Foundations***

Sen's (1999) capability approach provides the normative foundation for the framework, reframing credential recognition from economic asset validation toward freedom enhancement. The approach distinguishes between functionings (achieved beings and doings) and capabilities (real freedoms to achieve functionings one has reason to value). This distinction proves crucial for understanding brain waste: an immigrant professional may possess credentials (resources) and even have those credentials formally recognized (validated resources) without possessing the real freedom to convert those credentials into professional practice (capability). Recognition processes operate at this capability-functioning interface, determining whether formal qualifications translate into substantive professional opportunity.

Robeyns (2005) elaborated the concept of conversion factors, the personal, social, and environmental characteristics that affect how efficiently individuals convert resources into functionings. Personal conversion factors include language proficiency, cultural adaptation, and individual confidence.

Social conversion factors include employer attitudes, discrimination patterns, professional network access, and recognition system design. Environmental conversion factors include labour market conditions, geographic distribution of opportunities, and regulatory frameworks. These conversion factors explain why equally qualified individuals achieve different outcomes: conversion efficiency varies based on factors often invisible in standard human capital analyses. Two nurses with identical credentials may experience vastly different capability sets depending on where they settle, which employers they encounter, and what social networks they can access.

I extend this normative foundation through care ethics (Noddings, 1984; Held, 2006), positioning social conversion factors as sites of ethical intervention requiring relational response. Care ethics emphasizes attending to others' needs, responding appropriately, and taking responsibility within relationships. Unlike abstract justice principles applied universally, care ethics grounds moral obligation in concrete relationships and particular circumstances. Organizations encountering immigrant professionals with unrecognized credentials face ethical obligations beyond economic calculation: obligations to attend to professional identity needs, respond to capability constraints, and take responsibility for creating conditions where recognition becomes possible. This ethical framing aligns with Brown et al.'s (2005) conceptualization of ethical leadership as leaders who demonstrate normatively appropriate conduct and promote such conduct through relationships, suggesting that organizational leaders bear responsibility for creating conditions that enable rather than constrain immigrant professional capability.

### ***Dynamic Capabilities Theory***

Teece's (2007) dynamic capabilities framework examines how organizations achieve sustainable competitive advantage in rapidly changing environments. Dynamic capabilities comprise three clusters of activities: sensing (identifying opportunities and threats through scanning, learning, and interpretive activities), seizing (mobilizing resources to address opportunities through investment, governance design, and resource combination), and reconfiguring (continuous organizational renewal through asset orchestration, knowledge management, and capability rebuilding). This framework extends the resource-based view of the firm (Wright et al., 2001) by emphasizing how organizations can build and maintain advantage through ongoing adaptation rather than relying solely on existing resource endowments.

Applied to credential recognition, the dynamic capabilities framework positions recognition as potentially constituting organizational capability generating sustainable competitive advantage. Organizations that systematically identify, validate, and integrate immigrant credentials gain access to human capital configurations unavailable to competitors. The sensing function corresponds to identifying international talent opportunities, monitoring credential flows, and interpreting quality signals from unfamiliar educational systems. The seizing function corresponds to developing recognition infrastructure, bridging programs, and integration pathways. The reconfiguring function corresponds to adapting organizational structures, team compositions, and knowledge systems to incorporate diverse expertise effectively.

Wright et al. (2001) established that HR systems can constitute VRIO-compliant resources (valuable, rare, inimitable, organized). Recognition systems that systematically access immigrant talent pools create human capital configurations meeting these criteria. Value derives from activating otherwise wasted human capital that competitors leave dormant. Rarity derives from the relative scarcity of organizations possessing sophisticated recognition capabilities; most organizations lack systematic approaches to evaluating and integrating foreign credentials. Inimitability derives from the socially complex integration processes, including mentoring relationships, cultural bridging, and tacit knowledge transfer, that are path-dependent and embedded in organizational history. Organization derives from the strategic integration that enables recognized credentials to be deployed effectively within existing organizational systems.

## **The AMO Framework**

The Ability-Motivation-Opportunity (AMO) framework, originating with Appelbaum et al. (2000) and extensively reviewed by Bos-Nehles et al. (2023) in the *International Journal of Management Reviews*, specifies three mechanisms through which HR practices affect performance. Ability refers to employees' knowledge, skills, and competencies that enable task performance. Motivation refers to the willingness and desire to exert effort toward organizational goals. Opportunity refers to the structural conditions, including job design, participation mechanisms, and resource access, that enable ability and motivation to translate

into performance. Jiang et al. (2012) demonstrated through meta-analytic investigation that HR practices affect organizational outcomes through these three mediating mechanisms.

Recent theoretical development, particularly Bos-Nehles et al.'s (2023) comprehensive review examining the AMO framework's conceptualization, measurement, and interactions, has clarified that AMO mechanisms interact multiplicatively rather than additively. In a multiplicative model, the three components function as  $A \times M \times O$ , meaning weakness in any component creates a structural bottleneck that nullifies the others' effects. This multiplicative logic derives from expectancy theory foundations (Vroom, 1964), which specifies that motivation depends on the product of expectancy (belief that effort leads to performance), instrumentality (belief that performance leads to outcomes), and valence (value placed on outcomes). If any term equals zero, the product equals zero regardless of the other terms' values. High ability and high motivation produce nothing if opportunity is absent; high opportunity and high motivation produce nothing if ability is unvalidated.

Applied to credential recognition, the multiplicative AMO framework explains the persistent puzzle of why partial interventions consistently underperform expectations. Recognition systems that enhance ability (validate and bridge credentials) without addressing opportunity (regulatory access, employer receptivity) produce validated but unemployable credentials. Systems that create opportunity (licensure pathways) without building motivation (pathway clarity, identity support) find access pathways unutilized as discouraged professionals disengage. Systems that build motivation (signaling employment prospects) without enhancing ability (competency verification) produce unrealistic expectations followed by disappointment and disillusionment. Only comprehensive systems addressing all three mechanisms simultaneously can convert credential recognition into capability realization.

### ***The IMOI Framework for Credential Recognition***

Building on this integrative synthesis, I develop an Input-Mediator-Outcome-Input (IMOI) framework positioning credential recognition as a cyclical, multilevel talent management mechanism. Unlike static input-process-output (IPO) models that treat outcomes as terminal states, the IMOI structure (Ilgen et al., 2005) emphasizes that outcomes serve as inputs for subsequent cycles, capturing developmental dynamics essential for understanding workforce capability building. Table 3 presents the complete framework structure with constructs, components, and theoretical grounding for each element.

**Table 3**

*IMOI Framework Structure: Constructs, Components, and Theoretical Grounding*

Stage	Construct	Core Components	Theoretical Foundation
Input	Credential Characteristics	Type, origin, currency, quality assurance, documentation	Human capital theory
Input	Human Capital Stock	Explicit knowledge, tacit expertise, networks, cultural capital	Nafukho et al. (2004)
Input	Recognition System	Accessibility, transparency, comprehensiveness, responsiveness	NHRD theory
Input	Institutional Context	Regulatory bodies, associations, unions, labour market	Institutional theory
Mediator	Ability Enhancement	Validation, gap assessment, bridging, supervised practice	AMO framework
Mediator	Motivation Building	Signalling, pathway clarity, identity support, psychological contract	Holton (2005); Vroom (1964)
Mediator	Opportunity Creation	Regulatory access, employer signalling, network access	Institutional opportunity
Moderator	Conversion Factors	Personal (language), social (discrimination), environmental	Sen (1999); Robeyns (2005)

Moderator	Absorptive Capacity	Potential capacity; realized capacity	Zahra & George (2002)
Moderator	Strategic Maturity	Four-level continuum: compliance to strategic partnership	Adapted from SHRD
Outcome	Individual Realization	Employment in field, career advancement, identity, well-being	Capability functionings
Outcome	Organizational Utilization	Workforce composition, capability diversity, innovation	Dynamic capabilities
Outcome	National Activation	Labour efficiency, productivity, shortage reduction	NHRD theory
Feedback	IMOI Loops	Macro (policy: years-decades); micro (skill/identity: months-years)	Ilgen et al. (2005)

*Note.* NHRD = national human resource development; AMO = Ability-Motivation-Opportunity; SHRD = strategic human resource development. The framework distinguishes potential from realized absorptive capacity following Zahra and George (2002). Strategic maturity levels adapted from Garavan (1991), McCracken and Wallace (2000), and Mitsakis (2019).

### Strategic Maturity Continuum

I adapt and extend the strategic HRD maturity literature to operationalize strategic maturity as a four-level continuum for credential recognition. This adaptation applies concepts from Garavan (1991), McCracken and Wallace (2000), and Mitsakis (2019) to the specific domain of credential recognition, extending the original frameworks by incorporating ethical commitment and regulatory advocacy at the highest maturity level. Table 4 presents the adapted maturity levels with expected outcomes at each stage.

**Table 4**  
*Strategic Maturity Continuum for Credential Recognition*

Level	Orientation	Recognition Treatment	Expected Outcomes
1	Compliance	Recognition as regulatory requirement; credentials acknowledged but disconnected	Minimal capability realization; credentials documented but unused
2	Operational	Recognition informs training needs; some bridging; reactive to cases	Moderate short-term gains; limited trajectory; case variation
3	Integrated	Recognition embedded in career pathways; systematic programs; identity support	Strong advancement; identity integration; retention
4	Strategic	Recognition as sensing capability; regulatory advocacy; ethical commitment	Competitive advantage; organizational justice; system influence

*Note.* Maturity levels adapted from Garavan (1991), McCracken and Wallace (2000), and Mitsakis (2019) strategic HRD literature. This adaptation extends original frameworks by incorporating ethical commitment and regulatory advocacy at Level 4. Movement between levels requires both structural changes and cultural transformation.

### ***IMOI Feedback Dynamics***

The framework specifies two critical feedback loops operating on different temporal scales with distinct mechanisms. The macro feedback loop operates through political economy mechanisms over years to decades. National human capital activation, aggregating from organizational utilization of recognized credentials, provides feedback that reshapes recognition system characteristics and regulatory structures. When credential recognition produces visible labour market integration, reducing skills shortages and demonstrating immigrant professional capability, policymakers receive signals reinforcing investment in recognition infrastructure. Regulatory bodies may adjust licensing requirements; professional associations may develop alternative pathways; unions may negotiate credential-sensitive provisions. Conversely, when brain waste persists despite investment, political support for recognition infrastructure may erode as policymakers conclude that interventions are ineffective.

The micro feedback loop operates through individual developmental mechanisms over months to years. Individual capability realization serves as reloading input for subsequent human capital stock, shaping the resources individuals bring to future capability building. Successful recognition enables continued skill development (professionals practising in their fields maintain and enhance expertise through ongoing practice), professional network expansion (integration provides access to colleagues, mentors, and career opportunities unavailable to those outside the profession), and identity consolidation (professional practice confirms and strengthens professional identity, building confidence and self-efficacy). These developments create positive spirals of capability building where initial recognition enables further development that strengthens subsequent capability.

Conversely, recognition failure produces negative feedback with compound effects that become progressively difficult to reverse. Prolonged underemployment causes skill atrophy, as technical skills deteriorate without practice and currency fades as fields evolve beyond the stagnant practitioner. Professional identity erosion occurs as individuals cope with status inconsistency by redefining themselves away from professional roles, a psychological adaptation that protects self-esteem in the short term but makes eventual integration more difficult even if opportunities arise. Motivation deterioration manifests as learned helplessness, with repeated failure suppressing future engagement with recognition systems perceived as futile. These negative dynamics explain why early intervention matters: the longer brain waste persists, the more difficult resolution becomes as human capital depreciates and psychological resources deplete.

### **Propositions**

Following Lynham's (2002) general method of theory building in applied disciplines, I advance eleven propositions specifying testable relationships derived from the integrative framework. These propositions are organized by theoretical mechanism to facilitate systematic empirical testing. Table 5 summarizes the propositions with their theoretical grounding.

**Table 5** *Propositions Organized by Theoretical Mechanism*

<b>Category</b>	<b>Proposition</b>	<b>Theoretical Basis</b>
Input-Outcome (P1)	Recognition system comprehensiveness positively related to capability realization	Capability approach
Input-Outcome (P2)	Absence of comprehensive systems produces brain waste inversely related to comprehensiveness	Human capital theory
Process (P3)	AMO mechanisms function multiplicatively; failure of any creates bottleneck	Expectancy theory; AMO
Process (P4)	Comprehensive bridging with identity support produces higher realization than assessment alone	AMO; Care ethics
Moderation (P5)	Recognition functions as social conversion factor moderated by personal, social, environmental	Capability approach
Moderation (P6)	Absorptive capacity (particularly realized) moderates credential-utilization translation	Absorptive capacity

Moderation (P7)	Strategic maturity differentially moderates recognition-advancement relationship	Adapted SHRD maturity
Institutional (P8)	Regulatory opportunity constitutes necessary condition in regulated professions	Institutional theory
Dynamic (P9)	Systematic recognition creates VRIO-compliant human capital	Resource-based view
Dynamic (P10)	Recognition functions as reconfiguring capability enabling workforce agility	Dynamic capabilities
Cross-Level (P11)	Recognition operates through composition effects and feedback across levels	Multilevel theory; IMO

*Note.* SHRD = strategic human resource development; VRIO = valuable, rare, inimitable, organized; AMO = Ability-Motivation-Opportunity. Propositions 1-2 address input-outcome relationships; Propositions 3-4 address process mechanisms; Propositions 5-7 address moderation effects; Proposition 8 specifies boundary conditions; Propositions 9-10 address competitive dynamics; Proposition 11 addresses cross-level feedback.

### Core Propositions Elaborated

**Proposition 1:** Recognition system comprehensiveness is positively related to individual capability realization, such that systems addressing credential validation, competency bridging, motivation building, and opportunity creation produce greater conversion of credentials into professional functioning than partial systems addressing fewer components.

This proposition derives from the capability approach's emphasis on conversion factors and the AMO framework's specification of multiple mediating mechanisms. Comprehensive systems address the full range of factors determining whether credentials convert into capabilities. Partial systems, however well-designed within their scope, leave bottlenecks that constrain overall effectiveness. Empirical test would compare outcomes across systems varying in comprehensiveness, predicting positive relationship between comprehensiveness and capability realization measures.

**Proposition 3:** AMO-enhancing recognition processes function as a multiplicative system ( $A \times M \times O$ ), where the failure of any single mechanism acts as a structural bottleneck that prevents conversion of foreign credentials into workforce integration. Specifically: (a) High Ability without Opportunity produces validated but unemployable credentials; (b) High Motivation without Ability produces engagement without competence validation; (c) High Opportunity without Motivation produces access pathways that remain unutilized.

This proposition derives from expectancy theory's multiplicative logic as elaborated by Bos-Nehles et al. (2023) and explains why partial interventions consistently fail despite addressing apparent needs. Empirical test would compare outcomes across intervention types, predicting that comprehensive interventions addressing all three mechanisms outperform partial interventions by more than the sum of individual effects, demonstrating interaction rather than mere addition.

**Proposition 8:** In regulated professions (nursing, medicine, engineering, law, accounting, teaching), regulatory opportunity constitutes a necessary condition for capability realization, such that organizational credential recognition, regardless of sophistication, cannot substitute for regulatory licensure and organizational action alone cannot overcome regulatory barriers.

This proposition specifies the boundary condition distinguishing regulated from unregulated occupations. In regulated professions, licensing bodies control market entry, and organizational recognition without regulatory authorization cannot enable professional practice. The proposition predicts zero capability realization in regulated professions absent regulatory opportunity regardless of ability and motivation levels, confirming the multiplicative logic when opportunity equals zero. This boundary condition has practical significance: it identifies where organizational action reaches limits requiring policy intervention and regulatory advocacy.

## Research Agenda

The propositions specify testable relationships requiring empirical validation before they can guide practice with confidence. Table 6 presents a research agenda mapping propositions to methodological approaches suited to testing each relationship, attending to the multilevel data structures and temporal dynamics specified in the framework.

**Table 6**

*Research Agenda: Propositions Mapped to Methodological Approaches*

P#	Research Question	Methodology	Key Variables
P1-2	How does system comprehensiveness affect brain waste?	Comparative policy analysis; econometric	System features; overqualification
P3	Do AMO components interact multiplicatively?	SEM with interaction; quasi-experimental	A, M, O scores; interactions
P4	Does identity support enhance recognition?	RCT; matched comparison	Identity support; career outcomes
P5	Which conversion factors most constrain?	Mixed methods; hierarchical regression	Personal, social, environmental
P6-7	How do organizational factors moderate?	Multilevel analysis; case comparison	Absorptive capacity; maturity
P8	How do regulatory structures constrain?	Comparative institutional analysis	Licensing; professional entry
P9-10	Does recognition constitute competitive advantage?	Comparative cases; performance	Recognition capability; outcomes
P11	How do feedback loops operate?	Longitudinal panels; system dynamics	Outcomes across levels; time

*Note.* SEM = structural equation modelling; RCT = randomized controlled trial. Research designs should attend to multilevel data structures and temporal dynamics. System dynamics modelling may prove particularly valuable for testing feedback mechanisms.

## Discussion

### *Theoretical Contributions*

The framework advances talent management theory in four significant ways with implications for both scholarship and practice. First, by demonstrating how credential recognition engages psychological, economic, and systems processes simultaneously while ethics moderates all three, I establish recognition as legitimate talent management domain rather than external policy concern. This domain legitimacy matters practically: it authorizes talent management scholars and practitioners to address credential recognition as core concern rather than treating it as someone else's problem. The three-domain test provides warrant for scholarly attention and practical investment that has been lacking in prior treatments of the topic.

Second, by resolving the tension between human capital theory's economic logic and capability approach's normative logic, I show how organizational talent management serves as bridging mechanism. The shared value framing, drawing theoretically on Porter and Kramer's (2011) concept while extending it into the specific domain of credential recognition, demonstrates that effective recognition need not trade off economic and ethical imperatives; rather, well-designed recognition serves both simultaneously. Organizations that recognize credentials effectively gain competitive advantage while expanding the real freedoms of credential holders to achieve professional lives they have reason to value.

Third, by specifying multiplicative AMO dynamics, IMO feedback loops, and institutional boundary conditions, I move beyond descriptive accounts toward analytical explanation. The multiplicative logic explains why partial interventions fail despite addressing apparent needs; the feedback

dynamics explain why timing matters and how current decisions shape future possibilities; the boundary conditions explain where organizational action reaches limits requiring policy intervention. These analytical specifications enable prediction and guide intervention design in ways that purely descriptive accounts cannot achieve.

Fourth, by connecting organizational capability to regulatory context and specifying where organizational action reaches limits, I clarify the boundary between organizational and policy domains. This boundary specification has both theoretical and practical value: theoretically, it identifies the scope conditions under which organizational-level theories apply; practically, it guides organizations toward appropriate action while identifying when regulatory advocacy becomes necessary for effectiveness.

### **Boundary Conditions and Scope**

The framework operates at the intersection of organizational practice and regulatory environment, and its applicability varies across contexts in predictable ways. In regulated professions (nursing, medicine, engineering, law, accounting, teaching), regulatory opportunity constitutes a necessary condition that organizational action alone cannot satisfy. The multiplicative AMO logic predicts that even high Ability and Motivation produce zero capability realization when regulatory Opportunity is absent. This boundary condition explains why brain waste is particularly acute in regulated health professions despite critical shortages: regulatory barriers create structural bottlenecks that organizational recognition cannot overcome regardless of sophistication.

In unregulated occupations, employer-level recognition substitutes for regulatory validation, making absorptive capacity and strategic maturity relatively more consequential. Organizations can create opportunity through hiring decisions, making the full AMO logic operational within organizational control. The framework's predictions thus vary systematically across regulatory contexts: in regulated professions, Proposition 8's boundary condition dominates and organizational action must be complemented by regulatory advocacy; in unregulated occupations, Propositions 6-7's organizational moderators become more consequential and organizational action alone can produce significant effects.

### **Practical Implications**

For recognition system designers at national and jurisdictional levels: Address all AMO components rather than emphasizing validation alone. The multiplicative logic predicts that partial interventions consistently underperform because weakness in any component nullifies the others' effects regardless of the strength of addressed components. Systems must integrate ability enhancement (comprehensive assessment with bridging pathways addressing identified gaps), motivation building (clear pathways with realistic timelines, identity support acknowledging professional expertise, and expectations management), and opportunity creation (regulatory access, employer engagement initiatives, and professional network facilitation).

For organizational leaders: Assess strategic maturity and absorptive capacity before expecting recognition investments to produce returns. At low maturity levels, even effective recognition produces credentials disconnected from career advancement because organizational systems lack integration. Developing maturity, integrating recognition into talent management systems, career pathways, and learning cultures, is prerequisite for strategic returns. Organizational leaders should recognize the ethical dimension: credential recognition is a matter of human dignity requiring care-based responses that treat immigrant professionals as whole persons with identity needs and relational expectations rather than merely human capital to be optimized for extraction.

For regulatory bodies and professional associations: Attend to the feedback dynamics specified in the framework. Current regulatory structures shape future workforce composition through path-dependent effects that persist across decades. Where brain waste persists despite organizational effort, regulatory reform may be necessary to create opportunity structures enabling capability realization. Regulatory bodies might consider alternative licensure pathways that maintain professional standards while reducing barriers for qualified international professionals, bridging program recognition that creates structured routes to full licensure, and supervised practice arrangements that enable credential holders to demonstrate competence while addressing any genuine gaps in preparation.

## Limitations

The framework is developed conceptually; empirical testing is required before the propositions can guide practice with confidence. The multiplicative AMO logic, while theoretically compelling and consistent with expectancy theory foundations, requires validation through structural equation modelling with interaction terms and quasi-experimental designs comparing comprehensive versus partial interventions. The strategic maturity levels represent an adaptation of existing SHRD frameworks; this adaptation requires operationalization through scale development and validation across organizational contexts before confident application.

The feedback loop specifications, while theoretically grounded in IMO and multilevel theory, would benefit from system dynamics modelling to test temporal mechanisms and explore parameter sensitivity. Longitudinal panel studies tracking individuals through recognition processes would enable direct observation of the micro feedback mechanisms specified in Proposition 11. Such studies would need to span sufficient time periods to observe the developmental dynamics theorized, potentially requiring multi-year research designs with substantial resource requirements.

## Conclusion

Credential recognition represents a critical mechanism for translating immigrant human capital into workforce capability, a process inadequately theorized in talent management scholarship despite its growing significance for organizational competitiveness, sectoral workforce development, and individual flourishing. This article addresses that gap through an integrative IMO framework demonstrating how six theoretical traditions synthesize to explain the brain waste paradox and specify conditions for its resolution.

The multiplicative AMO logic explains why partial interventions consistently fail: weakness in any component creates structural bottlenecks nullifying the others' effects regardless of how well-addressed components perform. High ability and high motivation produce nothing if opportunity is absent; high opportunity and high motivation produce nothing if ability remains unvalidated. The feedback dynamics explain why early intervention matters: delayed recognition initiates negative spirals of skill atrophy, identity erosion, and motivation deterioration that become progressively difficult to reverse as time passes. The strategic maturity continuum explains why organizational context shapes outcomes: recognition effectiveness depends on the degree to which recognition is integrated with broader talent management systems and organizational strategy. The institutional boundary conditions explain where organizational action reaches limits: in regulated professions, regulatory opportunity constitutes necessary condition that organizational recognition alone cannot satisfy. The ethical foundation explains why credential recognition requires attention to human dignity: organizations encountering immigrant professionals with unrecognized credentials face relational obligations extending beyond economic calculation to encompass professional identity, belonging, and respect.

Brain waste represents billions in unrealized productivity, untapped talent in shortage occupations, constrained professional lives, and eroded human dignity. The costs fall disproportionately on immigrant professionals who invested years developing expertise only to find that expertise rendered invisible upon crossing national boundaries. But the costs extend beyond individuals to encompass organizations that cannot access available talent, sectors that cannot fill critical positions, and societies that cannot benefit from human capital they actively recruited.

Recognition systems functioning as effective talent management interventions can convert this waste into capability, advancing organizational competitiveness while expanding the real freedoms of credential holders to achieve professional lives they have reason to value. The framework developed here provides theoretical architecture for pursuing that transformation, bridging economic and normative logics in ways that serve both organizational performance and human flourishing. Empirical testing of the propositions will refine and extend the framework, moving from conceptual contribution toward evidence-based practice. The stakes, measured both economically in billions of unrealized productivity and ethically in millions of constrained professional lives, warrant sustained scholarly attention to this critical yet undertheorized domain.

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