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The Value Equation of Talent: A Human Capital Economics Perspective on Workforce Investment, Employee Engagement, and Firm Performance in the Free Trade Economy of Kepulauan Riau

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Abstract
Human resource management (HRM) is increasingly understood not merely as an administrative function but as an economic decision domain in which firms allocate scarce capital to workforce development, compensation, and engagement in pursuit of measurable returns. This article develops an integrative, economics-oriented perspective on HRM human capital economics and applies it to the distinctive labor-market context of Kepulauan Riau, Indonesia's frontier free trade economy anchored by Batam's manufacturing and logistics industries and by the province's public-sector and state-owned enterprise workforce. Synthesizing evidence from Human Capital Theory, the Resource-Based View, and Conservation of Resources theory, the article traces the economic logic connecting workforce investment, compensation design, employee engagement, and firm-level performance. Drawing on recent empirical studies conducted in Batam's manufacturing sector and in Kepulauan Riau's state-owned enterprises and regional government institutions, alongside a broader international literature on human capital investment and compensation-performance relationships, the article proposes an integrated conceptual model in which human capital functions as an appreciating economic asset whose returns are realized through engagement-mediated productivity. The analysis suggests that in free-trade-zone economies such as Batam, where firms compete simultaneously on labor cost and productivity, workforce investment decisions carry outsized economic consequences relative to more mature industrial economies. The article concludes with policy and managerial implications for treating human capital as a strategic investment portfolio rather than a recurring operating cost, and outlines an agenda for future empirical research in the region.
Keywords: human capital economics; employee engagement; firm performance; free trade zone; human capital theory.

INTRODUCTION

Human resource management (HRM) has historically been treated in much of the applied management literature as an administrative and behavioral discipline concerned with recruitment, training, appraisal, and employee well-being. Yet beneath these administrative functions lies an unmistakably economic logic: every HRM decision — whom to hire, how much to pay, how much to invest in training, how to structure engagement initiatives — is fundamentally a resource-allocation decision made under conditions of scarcity and uncertainty (Chen & Chang, 2024). This article adopts the perspective of human capital economics, treating the workforce not as a cost center to be minimized but as a portfolio of economic assets whose value can be developed, depreciated, or destroyed depending on how organizations manage it.

This economic framing is especially consequential in free-trade-zone (FTZ) economies, where firms compete simultaneously on labor cost efficiency and productivity in globally contestable markets. Kepulauan Riau (the Riau Islands Province), anchored by the Batam Free Trade Zone, is one of Indonesia's most economically distinctive labor markets: a manufacturing and logistics hub integrated into regional and global supply chains, alongside a substantial public-sector and state-owned enterprise workforce operating under different economic incentives entirely (Syafrida & Mon, 2026; Setyawan, Melinda, & Nelson, 2024). Understanding how human capital investment translates into firm performance in this specific economic environment therefore has both theoretical and practical significance that a generic, sector-agnostic HRM analysis cannot fully capture.

Recent empirical evidence from Batam's manufacturing sector illustrates this economic logic directly: a quantitative study of 230 employees across five Batam manufacturing companies found that management support and work environment operate through employee productivity as a mechanism linking organizational investment to employee performance (Syafrida & Mon, 2026). In Batam's logistics industry, transformational leadership and employee engagement were found to shape organizational performance through the mediating channel of organizational resilience, suggesting that human capital returns are not always immediate but are realized through an organization's capacity to absorb and adapt to disruption (Setyawan et al., 2024). Parallel studies conducted within Kepulauan Riau's state-owned enterprise and regional government sector — including a study of employee engagement determinants at a holding state-owned insurance and guarantee enterprise in the Riau Islands (Sentoso & Muchsinati, 2024), an analysis of empowerment as a mediator of leader-member exchange on employee performance across Dekranasda offices spanning the province's eight districts and cities (Yanty, Patiro, & Wati, 2024), and an evaluation of performance constraints within the Bureau of Government and Regional Autonomy of the Riau Islands Provincial Secretariat (Ferdilianto, Suharto, & Bahrum, 2025) — reveal that even within non-market public institutions, workforce investment and relational management practices carry measurable performance consequences.

Despite this growing regional evidence base, the literature on Kepulauan Riau's workforce has so far developed largely along disciplinary lines — separate studies of engagement, leadership, empowerment, and productivity — without an integrating economic framework that connects these constructs through the shared logic of capital investment and return. This article addresses that gap by proposing an integrative human capital economics perspective, drawing on Human Capital Theory (Chen & Chang, 2024; Cassidy, Harrison, & Jackson, 2025), the Resource-Based View (Westover,

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2026), and Conservation of Resources theory (Suryanto, 2025), and applying this perspective to synthesize the regional Kepulauan Riau evidence alongside a broader international literature on human capital investment, compensation, and firm performance.

The economic stakes of this question are amplified by Batam's specific position within global manufacturing value chains. Unlike firms operating in purely domestic markets, FTZ manufacturers and logistics operators in Batam must simultaneously satisfy the cost expectations of price-sensitive global buyers and the quality and delivery-reliability standards that determine whether contracts are renewed or relocated to competing FTZ economies elsewhere in Southeast Asia. In this environment, workforce investment decisions are rarely purely discretionary; they are constrained optimization problems in which every rupiah allocated to training, compensation, or engagement programming must be justified against an implicit or explicit productivity return, since underinvestment risks quality failures while overinvestment risks eroding the labor-cost advantage that anchors Batam's competitiveness in the first place. This tension is precisely what makes Kepulauan Riau an analytically valuable setting for human capital economics: it is a labor market in which the returns to workforce investment are not abstract theoretical constructs but concrete, competitively consequential outcomes that determine firm survival.

Accordingly, this article pursues three objectives: (1) to articulate the theoretical logic connecting human capital investment to firm-level economic outcomes; (2) to synthesize existing empirical evidence — regional and international — on the pathways through which this investment is converted into performance, with particular attention to employee engagement as a mediating economic mechanism; and (3) to propose an integrated conceptual model and set of testable propositions tailored to the economic structure of Kepulauan Riau's free-trade-zone labor market. The remainder of the article proceeds as follows: Section 2 develops the theoretical foundations of human capital economics; Section 3 examines the economic logic linking compensation, engagement, and productivity; Section 4 situates this logic within the regional economic context of Kepulauan Riau; Section 5 presents an integrated conceptual model and propositions; Section 6 discusses managerial and policy implications; and Section 7 concludes with limitations and directions for future research.

LITERATURE REVIEW

Human Capital Theory: Workforce Investment as Capital Formation

Human Capital Theory provides the foundational economic logic for this article: it treats knowledge, skills, and capabilities embedded in individual workers as a form of capital that, like physical capital, can be invested in, accumulated, and depreciated (Chen & Chang, 2024; Yusnandar & Tanjung, 2026). Unlike physical capital, however, human capital is inseparable from the individual who holds it, which introduces distinctive economic risks — most notably that firms may underinvest in training for fear that competitors will capture the returns through employee turnover. Using a propensity score matching design on longitudinal manufacturing-sector data, Chen and Chang (2024) demonstrated that firm-sponsored employee training investment produced measurable, statistically identifiable improvements in firm performance in Taiwan's manufacturing sector, providing causal-style evidence for the core proposition of Human Capital Theory that training is genuine capital formation rather than merely a discretionary expense. Complementary evidence from Zambia's public sector similarly shows that human capital functions as a mediating variable between HRM practices — recruitment, performance management, training, compensation, and engagement — and employee performance, meaning that HRM practices generate performance returns specifically by building human capital stocks rather than through any direct mechanism (Cassidy et al., 2025). In the Indonesian telecommunications sector, human capital development through training and career development was similarly found to shape employee performance, particularly salient in industries facing rapid technological change that erodes existing skill stocks (Yusnandar & Tanjung, 2026).

The Resource-Based View: Human Capital as a Source of Competitive Advantage

Where Human Capital Theory explains why investment in people generates returns, the Resource-Based View (RBV) explains why those returns can translate into sustained competitive advantage. The RBV holds that resources which are valuable, rare, inimitable, and non-substitutable are the strategic basis of superior firm performance; human capital, when effectively developed and retained, satisfies these criteria more readily than most other organizational resources because it is difficult for competitors to replicate the tacit, firm-specific knowledge embedded in an experienced, engaged workforce. Westover (2026) extends this logic by proposing the construct of "employee experience capital" — an integrative framework treating digital tools, inclusive practices, sustainability initiatives, and well-being programs as components of a coherent workplace resource system that simultaneously supports employee flourishing and organizational effectiveness, rather than as

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disconnected HR initiatives. This reframing is consequential for the present analysis because it implies that the economic return on human capital investment is not simply additive across individual HR programs but depends on how coherently those programs are integrated into a unified resource system — a proposition with direct relevance to how Kepulauan Riau's manufacturing and public-sector organizations structure their own, often fragmented, HR investment portfolios.

Conservation of Resources: Engagement as the Mechanism of Value Realization

A third theoretical strand — Conservation of Resources (COR) theory — explains the psychological mechanism through which human capital investment is converted into performance outcomes. COR theory holds that individuals are motivated to acquire, protect, and invest personal resources, and that organizational conditions which threaten or deplete these resources (such as chronic workplace stressors) undermine performance even when human capital stocks are otherwise high. Suryanto (2025) applied this logic, together with the Job Demand-Control-Support model and Social Exchange Theory, to construct a conceptual framework in which workplace stressors affect SME sustainability specifically through their erosive effect on human capital, moderated by the availability of social support. This suggests that human capital investment and psychological resource protection are complementary, not substitutable: an organization can invest heavily in training and still fail to realize economic returns if working conditions deplete employees' psychological resources faster than those resources can be replenished. Employee engagement functions, in this framework, as the observable manifestation of resource sufficiency — engaged employees are those whose psychological resources exceed the demands placed upon them, freeing surplus energy for discretionary, performance-enhancing effort.

Toward an Integrated Theoretical Logic

Read together, these three theoretical traditions describe a coherent economic causal chain: Human Capital Theory explains why investment in workforce skills and capabilities constitutes genuine capital formation with measurable returns; the Resource-Based View explains how the resulting human capital stock, when coherently integrated across HR systems, becomes a source of sustained competitive advantage rather than a easily-imitated cost input; and Conservation of Resources theory explains the psychological mechanism — engagement — through which that capital stock is converted into realized economic performance rather than remaining latent or being eroded by adverse working conditions. This integrated logic forms the theoretical backbone for the conceptual model developed in Section 5. It also clarifies why single-theory analyses of Kepulauan Riau's

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workforce — an engagement study here, a leadership study there — risk understating the true economic value of human capital investment: each theoretical lens captures only one link in a longer causal chain, and the economic return realized at the end of that chain depends on all three links holding simultaneously. A firm that invests heavily in training (Human Capital Theory) but fails to integrate that investment coherently across its HR systems (Resource-Based View) will see diminished returns; likewise, a firm that achieves both investment and integration but allows chronic workplace stressors to deplete employee psychological resources (Conservation of Resources theory) will still fail to realize the performance gains that its human capital stock would otherwise support.

The Economic Logic of HRM: Compensation, Engagement, and Productivity

Compensation as a Price Signal and Investment Decision

From an economic standpoint, compensation is not merely an expense but a dual-purpose instrument: it is simultaneously a price paid for labor and a signal that shapes the quantity and quality of human capital an organization can attract and retain. Yang and Wang (2026), in an empirical study of listed companies, found that employee compensation was significantly associated with firm performance when analyzed through a human capital lens, indicating that compensation functions economically as an investment in retaining and motivating valuable human capital rather than purely as a cost to be minimized. This finding is consistent with broader evidence that compensation, when studied alongside engagement and leadership variables, forms part of an interconnected system of workforce investment rather than an isolated HR lever (Lingga, Karambut, Simatupang, & Putri, 2026; Sentoso & Muchsinati, 2024). In the correctional and public-sector context, Lusiana and Rahmayanti (2025) found that human capital, work discipline, and organizational environment jointly predicted employee performance, reinforcing that compensation and human capital development operate as complementary, not competing, investment channels even outside profit-driven firms.

Knowledge Management as an Intangible-Asset Multiplier

Beyond compensation, knowledge management represents a second economic lever through which firms extract additional value from their existing human capital stock without necessarily incurring proportional new investment. Gates (2024) found that knowledge management practices significantly influenced both employee performance and satisfaction, functioning economically as a multiplier that increases the return extracted from a given level of human capital by improving how effectively that capital is deployed, shared, and reused across the organization. Gulompo, Rintari, and

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Kanyaru (2025), studying a large utility workforce across multiple regions, similarly found knowledge management to be a significant predictor of employee performance, suggesting this multiplier effect generalizes across both manufacturing-adjacent and service-based organizational contexts. Economically, this positions knowledge management alongside direct training investment as a second, often lower-cost pathway for increasing the productive yield of existing human capital.

Employee Engagement as the Realization Mechanism

If human capital investment and knowledge management determine the size of an organization's productive capacity, employee engagement determines the extent to which that capacity is actually realized as measurable performance. A substantial body of evidence supports engagement's mediating economic role: strategic HRM practices were found to enhance organizational performance specifically through their effect on employee engagement (Cahyono, 2024); digital HRM initiatives improved employee performance through the mediating mechanism of engagement in an emerging-economy context closely analogous to Indonesia's own digital transformation trajectory (Bandhaso & Pala'langan, 2026); and artificial-intelligence-enabled HRM practices in Malaysia's manufacturing sector were found to shape employee engagement as AI reshaped recruitment, training, and performance-management functions (Ramalu, 2026). In an Indonesian manufacturing plant facing declining production output, employee engagement and satisfaction were found to jointly and significantly affect employee performance, directly paralleling the productivity concerns central to Batam's own manufacturing economy (Nusannas, Yusoff, Patoni, & Anggraeni, 2026). Engagement's mediating role also extends into public-sector and emerging-market contexts outside Indonesia: in Shanghai, HRM practices were found to shape employee engagement amid competitive and cultural pressures (Jing & Nuruly, 2025); in Kenya's Siaya county government, work environment, leadership, teamwork, and compensation were each linked to engagement and, through it, to performance (Onyango & Juma, 2025); and digitalization-era HRM was found to enhance engagement, motivation, and productivity across organizational settings more broadly (Feriandy & Hartini, 2025).

Boundary Conditions: Sustainability, Culture, and Ethical Practice

The economic returns to human capital investment are not unconditional; several studies identify boundary conditions under which the engagement-performance link strengthens or weakens. Green supply chain management practices were found to drive employee work engagement and, through it, firm performance, indicating that sustainability-oriented HR strategy can function as a genuine economic lever rather than merely a reputational one (Almereb, Alghababsheh, Shamim, &

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Rahman, 2026). Similarly, ESG-integrated HR practices in the hospitality industry were found to improve both employee performance and well-being, extending the human capital return pathway to include sustainability-linked human capital outcomes (Tabita & Gayatri, 2026). Organizational culture has also been shown to shape motivation, satisfaction, and engagement in labor-intensive service industries (Wee, 2025), while corporate social responsibility initiatives were found, in a systematic review, to positively influence both employee engagement and organizational performance (Joseph, 2024). Taken together, these findings suggest that the economic return on human capital investment is amplified when that investment is embedded within a broader system of sustainable, ethically coherent organizational practice — a boundary condition with direct relevance for FTZ manufacturing economies such as Batam, where sustainability and labor-practice scrutiny increasingly shape global supply-chain competitiveness.

Measuring the Economic Chain: Evidence from Applied HR Analytics

Methodologically, an emerging stream of applied people-analytics research provides direct empirical machinery for measuring the human capital economic chain described above. Zheng and Sikora (2025) proposed an integrated analytics framework combining Tournament Theory, Human Capital Theory, and Social Network Theory to enhance human resource information systems and performance evaluation, explicitly treating compensation structures, capability development, and relational network position as complementary, jointly measurable components of workforce economic value. Complementing this quantitative direction, sentiment-analysis-based approaches to measuring employee satisfaction offer a lower-cost, higher-frequency alternative to conventional survey instruments for monitoring the real-time state of an organization's human capital (Emexidis, Gkonis, & Liapakis, 2025). Both streams of methodological innovation point toward a future in which the economic returns to human capital investment can be tracked with a precision closer to that applied to physical and financial capital, closing a long-standing measurement gap in HRM economics. Similarly, in Pakistan's major industries, Saeed, Ali, and Gopang (2024) found that integrated HR systems — comprising recruitment, training, appraisal, and compensation strategies acting jointly rather than as isolated levers — were significant predictors of employee performance, reinforcing that the economic return on human capital investment is best understood as a system-level, not a component-level, phenomenon; and Paroli (2026) found that strategic HR planning and human capital investment jointly improved employee performance, mediated by engagement and moderated by psychological safety,

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illustrating how boundary conditions and mediating mechanisms interact within a single applied model.

Synthesis: The Full Economic Chain from Investment to Performance

Sections 3.1 through 3.5 collectively describe a multi-stage economic chain rather than a single bivariate relationship. Compensation and training function as direct capital-investment instruments (Yang & Wang, 2026; Lusiana & Rahmayanti, 2025); knowledge management functions as a multiplier that increases the yield extracted from existing human capital without proportional new investment (Gates, 2024; Gulompo et al., 2025); employee engagement functions as the realization mechanism converting accumulated human capital into discretionary performance-relevant effort (Cahyono, 2024; Bandhaso & Pala'langan, 2026; Nusannas et al., 2026); sustainability- and ethics-oriented practice functions as an amplifying boundary condition (Almereb et al., 2026; Tabita & Gayatri, 2026; Joseph, 2024); and applied analytics functions as the measurement infrastructure that makes this entire chain economically legible to decision-makers (Zheng & Sikora, 2025; Emexidis et al., 2025). Critically, none of these five mechanisms operates in isolation: Saeed et al. (2024) and Paroli (2026) both provide direct empirical evidence that HR levers generate performance returns specifically when deployed as an integrated system rather than as independent initiatives, which is precisely the systemic, multi-stage logic this article formalizes into the conceptual model presented in Section 5.

The Regional Economic Context: Kepulauan Riau's Free Trade Economy

Batam: A Manufacturing and Logistics Labor Market

Batam's status as a free trade zone integrated into regional and global manufacturing supply chains creates a labor market in which human capital economics operates under distinctive competitive pressure. Firms in this environment compete simultaneously on labor cost efficiency (given FTZ status and proximity to Singapore and Malaysia) and on productivity and quality standards demanded by global buyers, which sharpens the economic stakes of workforce investment decisions relative to more insulated domestic-market industries. Syafrida and Mon's (2026) study of 230 employees across five Batam manufacturing companies found that management support and work environment jointly influenced employee performance through the mechanism of employee productivity and organizational commitment, using Partial Least Squares Structural Equation Modeling to trace this causal chain empirically. This finding is economically significant because it demonstrates that even indirect,

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non-monetary forms of organizational investment — supportive management practices and physical/psychological work environment quality — generate measurable productivity returns in a manufacturing labor market where output is closely monitored and directly tied to firm competitiveness.

In Batam's logistics sector, a parallel but distinct economic mechanism operates: Setyawan et al. (2024) found that transformational leadership and employee engagement influenced organizational performance through the mediating role of organizational resilience among managerial-level employees. This is economically notable because logistics firms in a globally integrated FTZ face volatile demand shocks (shipping disruptions, trade policy shifts, regional economic cycles), meaning that the economic value of human capital investment in this sector may be realized disproportionately during disruption events rather than under steady-state conditions — an insight with direct implications for how logistics firms in Batam should structure and time their workforce investment.

Kepulauan Riau's Public Sector and State-Owned Enterprise Workforce

Alongside Batam's private manufacturing and logistics economy, Kepulauan Riau's public-sector and state-owned enterprise (SOE) workforce operates under a substantially different economic logic — one in which performance incentives are shaped by administrative accountability and public-service mandates rather than market competition, yet in which human capital investment questions remain equally salient. Sentoso and Muchsinati (2024) examined engagement determinants at a state-owned insurance and guarantee holding enterprise across the Riau Islands region, finding that work environment, leadership, training and career development, compensation, team relationships, workplace welfare, and organizational policy jointly determined engagement, which in turn significantly influenced employee performance — a comprehensive empirical demonstration that the full human capital investment portfolio, not any single lever, drives performance even within a non-market SOE context. At the sub-provincial level, Yanty et al. (2024) found that employee empowerment mediated the effect of leader-member exchange on employee performance across Dekranasda offices dispersed throughout the Riau Islands' eight districts and cities, addressing a documented performance decline in that institution between 2021 and 2024 — evidence that relational human capital investment (in the form of empowerment-oriented leadership) carries measurable economic consequences even in geographically dispersed public administrative units. Ferdilianto et al. (2025), examining the Bureau of Government and Regional Autonomy of the Riau Islands Provincial Secretariat, identified infrastructure and work-discipline deficiencies as constraints on employee

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performance, illustrating that in public-sector contexts, human capital returns can be constrained not only by insufficient investment in people but by complementary physical and administrative-infrastructure capital — a reminder that human capital economics cannot be analyzed in isolation from the broader capital environment in which the workforce operates.

A Two-Track Regional Labor Market

Together, these regional studies reveal that Kepulauan Riau's labor market operates as a two-track economic system: a globally exposed, productivity-driven private manufacturing and logistics track centered on Batam, and a domestically oriented, administratively governed public-sector and SOE track spanning the province's wider archipelago. Both tracks exhibit the same underlying human capital economic logic identified in Sections 2 and 3 — investment translates into performance through engagement-related mediating mechanisms — but the specific investment levers, competitive pressures, and time horizons differ substantially between them. This two-track structure provides the regional empirical foundation for the integrated conceptual model developed in the following section.

An Integrated Conceptual Model and Propositions

Model Overview

Building on the theoretical foundations (Section 2), the economic mechanisms reviewed (Section 3), and the regional evidence from Kepulauan Riau (Section 4), this article proposes an integrated conceptual model of human capital economics comprising four sequential stages: (1) Human Capital Investment — encompassing compensation design, training and development, knowledge-management infrastructure, and supportive work-environment provision; (2) Human Capital Stock — the resulting accumulated skills, capabilities, and organizational knowledge assets, moderated by the coherence of their integration (Westover, 2026); (3) Engagement-Mediated Realization — the psychological and behavioral mechanism, grounded in Conservation of Resources theory, through which human capital stock is converted into discretionary effort and productivity (Cahyono, 2024; Bandhaso & Pala'langan, 2026); and (4) Firm/Organizational Performance — the ultimate economic output, measured differently across the private (productivity, competitiveness, resilience) and public/SOE (service quality, administrative performance) tracks identified in Kepulauan Riau's two-track labor market.

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Propositions

Proposition 1 (Investment-Stock Linkage): The magnitude of firm-level human capital investment — spanning compensation, training, and knowledge-management infrastructure — is positively associated with the accumulated human capital stock available to the organization, consistent with Human Capital Theory (Chen & Chang, 2024; Cassidy et al., 2025).

Proposition 2 (Coherence Moderation): The economic return on a given level of human capital investment is moderated by the degree to which HR programs are integrated into a coherent resource system rather than deployed as fragmented initiatives, consistent with the Resource-Based View and the employee experience capital construct (Westover, 2026).

Proposition 3 (Engagement Mediation): Employee engagement mediates the relationship between human capital stock and organizational performance, such that human capital investment which fails to translate into engagement will show attenuated or negligible performance returns, consistent with Conservation of Resources theory and the mediating-engagement evidence reviewed in Section 3.3 (Cahyono, 2024; Nusannas et al., 2026; Onyango & Juma, 2025).

Proposition 4 (Boundary Conditions): The strength of the engagement-performance relationship is strengthened when human capital investment is embedded within sustainability-oriented and ethically coherent organizational practice (Almereb et al., 2026; Tabita & Gayatri, 2026; Joseph, 2024), and weakened when workplace stressors deplete employees' psychological resources faster than human capital investment can replenish them (Suryanto, 2025).

Proposition 5 (Track-Specific Realization): In Kepulauan Riau's two-track labor market, the private manufacturing/logistics track realizes human capital returns primarily through productivity and organizational resilience under competitive and disruption pressure (Syafrida & Mon, 2026; Setyawan et al., 2024), whereas the public-sector/SOE track realizes returns primarily through empowerment-mediated leader-member relationships and administrative performance, contingent on complementary physical and infrastructural capital (Yanty et al., 2024; Ferdilianto et al., 2025).

Managerial and Policy Implications

For managers operating within Batam's manufacturing and logistics economy, the model developed here suggests that workforce investment decisions should be evaluated using the same capital-budgeting discipline typically reserved for physical and financial capital: training and

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compensation should be assessed not as recurring costs to be minimized but as investments with quantifiable engagement- and productivity-mediated returns (Syafrida & Mon, 2026; Yang & Wang, 2026). Given evidence that organizational resilience mediates the leadership-engagement-performance chain in logistics settings (Setyawan et al., 2024), firms in globally exposed FTZ industries should prioritize human capital investments — cross-training, psychological-safety-building leadership development, knowledge-management infrastructure — that specifically build absorptive and adaptive capacity for demand and supply-chain shocks, rather than investments optimized only for steady-state productivity.

For HR leaders in Kepulauan Riau's public-sector and SOE institutions, the comprehensive engagement-determinant evidence from Sentoso and Muchsinati (2024) suggests that no single HR lever — compensation, training, or leadership alone — is sufficient; performance-relevant human capital investment must be designed as an integrated portfolio spanning work environment, leadership quality, career development, compensation, team relationships, and organizational policy simultaneously. The empowerment-mediated LMX findings from Yanty et al. (2024) further imply that in geographically dispersed public institutions — a structural feature of an archipelagic province like Kepulauan Riau — relational and empowerment-oriented leadership investment may generate disproportionately large returns precisely because it is less dependent on centralized physical infrastructure than other investment channels, a relevant consideration given the infrastructure-related performance constraints documented by Ferdilianto et al. (2025).

At the policy level, Kepulauan Riau's provincial and municipal economic development authorities may consider the human capital economics perspective developed here as a rationale for structuring FTZ investment incentives that explicitly reward firm-level workforce investment (training subsidies, engagement-program co-financing) alongside conventional capital-investment incentives, on the economic logic that firms competing in globally exposed manufacturing and logistics markets under-invest in human capital when competitors can capture training returns through subsequent employee mobility — the classic market-failure rationale underlying Human Capital Theory's policy implications (Chen & Chang, 2024). Given the AI-enabled HRM evidence reviewed in Section 3.3 (Ramalu, 2026), regional workforce-development policy should also anticipate the reshaping of Batam's manufacturing labor market by AI-enabled HR technologies, positioning digital human capital literacy as a distinct, forward-looking investment category alongside conventional skills training.

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Finally, the boundary-condition evidence reviewed in Section 3.4 carries a specific implication for Kepulauan Riau's manufacturing exporters: because global buyers increasingly incorporate labor-practice and sustainability criteria into sourcing decisions, the economic return on human capital investment in Batam is likely to be increasingly conditional on its integration with visible, verifiable sustainability and ethical-practice commitments (Almereb et al., 2026; Tabita & Gayatri, 2026). Firms that treat workforce well-being and environmental practice as a unified investment portfolio, rather than as separate compliance and HR functions, are therefore positioned to capture a compounding economic return — improved engagement and productivity domestically, and improved buyer confidence and contract retention internationally — that firms treating these as separate cost centers are structurally unable to access.

Conclusion, Limitations, and Future Research

This article has developed an integrative human capital economics perspective on HRM and applied it to the distinctive two-track labor market of Kepulauan Riau — Batam's globally exposed manufacturing and logistics economy on one track, and the province's public-sector and state-owned enterprise workforce on the other. Synthesizing Human Capital Theory, the Resource-Based View, and Conservation of Resources theory, the article traced an economic causal chain from workforce investment through accumulated human capital stock, engagement-mediated realization, to firm and organizational performance, and grounded this chain in recent empirical evidence drawn from Batam manufacturing (Syafrida & Mon, 2026), Batam logistics (Setyawan et al., 2024), and Kepulauan Riau's SOE and public-sector institutions (Sentoso & Muchsinati, 2024; Yanty et al., 2024; Ferdilianto et al., 2025), alongside a broader international literature on human capital investment and compensation-performance relationships.

The resulting integrated conceptual model and its five propositions offer a theoretically grounded, empirically informed framework that regional researchers and practitioners can use to design future studies and workforce-investment strategies. Theoretically, the model contributes by explicitly connecting three previously separate theoretical traditions — Human Capital Theory, the Resource-Based View, and Conservation of Resources theory — into a single causal chain, and by identifying track-specific realization mechanisms distinguishing FTZ manufacturing economies from public-sector institutional contexts, an integration not previously articulated in the reviewed literature.

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This article has several limitations. First, as a conceptual and literature-integrative study, it does not present new primary data; the propositions developed here require empirical testing using firm-level or multi-organizational datasets from Kepulauan Riau specifically, since the regional studies synthesized here were each conducted independently, using different measurement instruments and samples, rather than within a single integrated research design. Second, the international literature drawn upon to support the general economic mechanisms (Sections 2 and 3) originates from diverse institutional and cultural contexts — Taiwan, Zambia, Pakistan, Kenya, the Philippines, and elsewhere — and while the underlying economic logic is presented as generalizable, the strength and specific pathways of these relationships may differ when tested directly within Kepulauan Riau's institutional environment. Third, the two-track model proposed in Section 5 simplifies what is likely a more continuous spectrum of organizational types within the province (for example, private firms with quasi-public characteristics, or SOEs operating under increasing market discipline); future research should test whether the proposed track-specific propositions hold at this finer level of organizational variation. Future empirical research should prioritize longitudinal, firm-level studies that directly measure the monetary return on human capital investment within Batam's manufacturing and logistics sectors, comparative studies contrasting engagement-performance mechanisms across the private and public/SOE tracks identified here, and applied people-analytics studies — following the methodological direction proposed by Zheng and Sikora (2025) — that quantify, with the same rigor applied to physical and financial capital, the economic returns generated by Kepulauan Riau's human capital investment.

References

Almereb, O. T., Alghababsheh, M., Shamim, S., & Rahman, M. (2026). Planet, People, and Profit: How Green Supply Chain Management Practices Drive Employee Work Engagement and Firm Performance. Corporate Social Responsibility and Environmental Management. https://doi.org/10.1002/csr.70576

Bandhaso, M. L., & Pala'langan, C. A. P. (2026). Unlocking Employee Performance Through Digital Human Resource Management: The Mediating Role of Employee Engagement. Reviu Akuntansi, Manajemen, dan Bisnis, 6(2), 93-108. https://doi.org/10.35912/rambis.v5i4.6275

Cahyono, N. D. (2024). Strategic Human Resource Management Practices for Enhancing Employee Engagement and Organizational Performance. Global International Journal of Innovative Research, 2(7), 1429-1444. https://doi.org/10.59613/global.v2i7.229

Cassidy, P., Harrison, D., & Jackson, P. (2025). The Mediating Effect of Human Capital on the relationship between Human Resource Management Practices and Employee Performance in Public Sector Organisations in Zambia. Journal of Economics, Finance And Management Studies. https://doi.org/10.47191/jefms/v8-i12-22

Chantabutr, P., & Wanarat, S. (2024). The effect of human capital, employee performance on work process improvement and employee performance on work productivity on sustainable competitive advantage in Thai banks. International Journal of Learning and Intellectual Capital, 21(1), 6-29. https://doi.org/10.1504/ijlic.2024.136375

Chen, Y., & Chang, C. (2024). Human Capital Investment and Firm Performance: A Propensity Score Matching Analysis of Employee Training in Taiwan's Manufacturing Sector (2006-2016). https://doi.org/10.2139/ssrn.4691612

Emexidis, C., Gkonis, P., & Liapakis, A. (2025). Analyzing Employee Job Satisfaction Through Sentiment Analysis for Enhanced Workplace Improvement and Business Success. https://doi.org/10.20944/preprints202507.0117.v1

Ferdilianto, F., Suharto, D. G., & Bahrum, S. (2025). Analysis Of Employee Performance In The Bureau Of Government And Regional Autonomy Of The Regional Secretariat Of The Riau Islands Province. Indonesian Journal of Social Science Research, 6(1), 257-261. https://doi.org/10.11594/ijssr.06.01.21

Feriandy, F., & Hartini, E. F. (2025). The Role of Human Resource Management in Improving Employee Engagement in the Digitalization Era. Indonesian Journal of Banking and Financial Technology, 3(4), 431-442. https://doi.org/10.55927/fintech.v3i4.174

G, S. G. P., & H, M. A. (2026). A study on employee engagement in enhancing employee performance at Entrust Software & Services. International Scientific Journal of Engineering and Management, 5(4), 1-6. https://doi.org/10.55041/isjem06630

Gates, A. (2024). Impact of Knowledge Management on Employee Performance and Satisfaction. European Journal of Information and Knowledge Management, 3(3), 1-13. https://doi.org/10.47941/ejikm.2065

Gulompo, D. J., Rintari, N., & Kanyaru, R. (2025). Influence of Knowledge Management on Employee Performance at Kenya Power and Lighting Company. Human Resource and Leadership Journal, 10(5), 1-14. https://doi.org/10.47941/hrlj.3097

Jing, Z., & Nuruly, S. (2025). The Impact of Human Resource Management on Employee Engagement in Workplace of Primostar, Shanghai. Asian Journal of Management Analytics, 4(1), 405-418. https://doi.org/10.55927/ajma.v4i1.12467

Joseph, N. (2024). The impact of corporate social responsibility on employee engagement and organizational performance: A systematic review. https://doi.org/10.2139/ssrn.4805695

K, T., & C, N. D. (2025). Human resource management practices and its impact on employee engagement and performance with reference to ELGI Equipments. Emerging Trends in Social Work Profession: Navigating Challenges and Seizing Opportunities, 14-17. https://doi.org/10.26524/royal.228.4

Lingga, H. S., Karambut, F., Simatupang, B. M., & Putri, V. R. (2026). The Effect of Digital Leadership Style, Compensation, and Employee Engagement on Employee Loyalty Through the Performance of Generation Z Employees at Sinar Mas Insurance. Journal Research of Social Science, Economics, and Management, 5(9), 11388-11408. https://doi.org/10.59141/jrssem.v5i9.1414

Lusiana, P. L., & Rahmayanti, R. (2025). The Effect of Human Capital, Work Discipline, and Organizational Environment on Employee Performance in Correctional Institutions. Journal of Social Studies Arts and Humanities (JSSAH), 5(2), 71-76. https://doi.org/10.33751/jssah.v5i2.12848

Nusannas, I. S., Yusoff, M. E., Patoni, P., & Anggraeni, Y. D. (2026). Employee engagement, employee satisfaction, and employee performance: evidence from an indonesian manufacturing company. JPPI (Jurnal Penelitian Pendidikan Indonesia), 12(1), 151-164. https://doi.org/10.29210/020265304

Onyango, C. A., & Juma, D. (2025). Employee Engagement and Employee Performance in the County Government of Siaya. Human Resource and Leadership Journal, 10(2), 1-15. https://doi.org/10.47941/hrlj.2607

Paroli (2026). Strategic HR Planning and Human Capital Investment in Improving Employee Performance: Mediation of Employee Engagement and Moderation of Psychological Safety. International Journal of Economics (IJEC), 5(1), 99-115. https://doi.org/10.55299/ijec.v5i1.1804

Ramalu, S. S. (2026). The Effect of Artificial Intelligent-Enabled Human Resource Management Practices on Employee Engagement in Manufacturing Sector in Malaysia. Global Conference on Business and Social Sciences Proceeding, 96. https://doi.org/10.35609/gcbssproceeding.2026.1(96)

Saeed, M., Ali, M., & Gopang, M. H. (2024). Human Resource Systems and Employee Performance: An Analysis in Major Industries of Pakistan. Journal of Social & Organizational Matters, 3(3), 242-251. https://doi.org/10.56976/jsom.v3i3.187

Sentoso, A., & Muchsinati, E. S. (2024). Determining employee engagement and its influence on employee performance at holding state-owned enterprises insurance and guarantees Riau Islands region. Jurnal Manajemen dan Pemasaran Jasa, 17(1), 39-58. https://doi.org/10.25105/v17i1.18516

Setyawan, A., Melinda, R., & Nelson, A. (2024). The Role of Organizational Resilience in the Influence of Transformational Leadership and Employee Engagement on Organizational Performance. Dinasti International Journal of Education Management And Social Science, 6(2), 785-798. https://doi.org/10.38035/dijemss.v6i2.3637

Suryanto, L. C. A. (2025). Workplace Stressors and SME Sustainability in Malaysia: A Conceptual Framework Linking Human Capital and Employee Performance. Journal of Technology Management and Technopreneurship (JTMT), 13(2). https://doi.org/10.54554/jtmt.2025.13.02.001

Syafrida, Y., & Mon, M. D. (2026). Employee Productivity as the Mechanism Linking Management Support and Work Environment to Employee Performance. Journal of Social Commerce, 6(1), 86-107. https://doi.org/10.56209/jommerce.v6i1.206

Tabita, I. D. A. T. P., & Gayatri, I. G. A. S. (2026). Strategic ESG-Driven HR Practices: Effects of ESG Integration on Employee Performance, Well-Being, and Human Capital Outcomes. Golden Ratio of Human Resource Management, 6(2), 443-461. https://doi.org/10.52970/grhrm.v6i2.2045

Wee, N. D. (2025). Influence of organizational culture on employee motivation, job satisfaction, and engagement in the hotel industry. Social Science and Human Research Bulletin, 2(10). https://doi.org/10.55677/sshrb/2025-3050-1001

Westover, J. H. (2026). Employee Experience Capital and Organizational Performance: An Integrated Framework for Understanding Workplace Resource Systems in Digitally Transformed Organizations. https://doi.org/10.20944/preprints202602.1988.v1

Yang, B., & Wang, Y. (2026). Employee compensation and firm performance: An empirical study from the perspective of human capital in listed companies. Finance Research Letters, 98, 109841. https://doi.org/10.1016/j.frl.2026.109841

Yanty, R., Patiro, S. P. S., & Wati, L. N. (2024). The Role of Employee Empowerment in Mediating the Effect of Leader-Member Exchange on Employee Performance in Dekranasda Riau Islands Province 2021-2024. Organization and Human Capital Development, 3(1), 108-122. https://doi.org/10.31098/orcadev.v3i1.1780

Yusnandar, W., & Tanjung, I. S. (2026). Human Capital Development and Employee Performance in the Indonesian Telecommunications Sector. Jesya, 9(2), 1691-1700. https://doi.org/10.36778/jesya.v9i2.2890

Zakhem, N. B. (2026a). Human Capital Development Programs, Employee Performance, and Employee Well-Being During Poly-Crisis: The Role of Work–Family Conflict and Technostress at SMEs in Lebanon. Societies, 16(8), 249. https://doi.org/10.3390/soc16080249

Zakhem, N. B. (2026b). The Impact of Human Capital Development Programs on Employee Performance and Well-Being Amid Lebanon's Crisis: The Role of Work–Family Conflict and Employee Resilience. Administrative Sciences, 16(7), 324. https://doi.org/10.3390/admsci16070324

Zheng, T., & Sikora, R. (2025). Advanced people analytics: integrating tournament theory, human capital theory, and social network theory for enhanced HRIS and performance evaluation. Knowledge-Based Systems, 330, 114477. https://doi.org/10.1016/j.knosys.2025.114477