Scientific Research Publishing

Open Journal of Business and Management, 2025, 13(4), 2890-2914
https://www.scirp.org/journal/ojbm
ISSN Online: 2329-3292
ISSN Print: 2329-3284

Aligning People for Digital Transformation in Ports: The Role of Internal Marketing, Learning, and Leadership

Mohd Khaidzir Farhan Bin Abidin[1], Abu Bakar Sade[1], Norizan Mat Saad[2]

[1]Putra Business School, University of Putra Malaysia, Seri Kembangan, Malaysia
[2]Faculty of Industrial Management, University of Malaysia Pahang Al-Sultan Abdullah, Pekan, Malaysia
Email: admin@mkfarhan.com

How to cite this paper: Abidin, M. K.F.B., Sade, A. B., & Saad, N. M. (2025). Aligning People for Digital Transformation in Ports: The Role of Internal Marketing, Learning, and Leadership. *Open Journal of Business and Management, 13,* 2890-2914.
https://doi.org/10.4236/ojbm.2025.134153

Received: June 2, 2025
Accepted: July 25, 2025
Published: July 28, 2025

Abstract

As ports accelerate their digital transformation, the human dimension remains underexplored. This study investigates how internal marketing influences organizational transformation performance in Malaysian ports, focusing on the mediating role of absorptive capacity and the moderating role of transformational leadership. Drawing from a survey of 219 managerial-level port employees, data were analyzed using partial least squares structural equation modelling (PLS-SEM). The findings reveal that internal marketing plays a significant direct role in driving transformation outcomes and strengthens knowledge absorption pathways. Interestingly, transformational leadership, while expected to moderate these effects, showed no significant interaction, suggesting its influence may lie in overall climate shaping rather than pathway conditioning. This research contributes to the literature by integrating the resource-based view with dynamic capability theory in a port sector context. From a practical standpoint, the results highlight the need for port operators to invest not only in systems and infrastructure but also in internal campaigns that build awareness, engagement, and knowledge mobilization. The study offers a grounded roadmap for aligning people with digital ambitions in one of the world's most critical logistics sectors.

Keywords

Digital Transformation, Internal Marketing, Absorptive Capacity, Transformational Leadership, Ports, Malaysia

1. Introduction

Global ports are undergoing a fundamental shift. Once defined by physical infra-

structure and operational throughput, today's ports are under pressure to become digitally agile and knowledge intensive. The COVID-19 pandemic, the rapid emergence of advanced technologies, and volatile supply chain patterns have revealed significant weaknesses in continuity and adaptability, particularly in maritime logistics systems (UNCTAD, 2023; World Bank, 2023). These pressures are especially acute in emerging economies such as Malaysia, where ports like Tanjung Pelepas, Johor Port, and Penang Port serve as vital conduits for trade, industrial development, and regional competitiveness.

Yet digital transformation in this context often falters, not because of technical limitations, but because the human systems around technology fail to evolve. A 2023 McKinsey report found that over 70 percent of large-scale digital initiatives fall short of expectations, not due to technical issues, but because of internal misalignment and organizational inertia. This paradox is especially visible in port sectors, where asset-intensity and legacy systems meet rising demands for agility and innovation.

Despite heavy investments in digital infrastructure, many ports struggle to achieve sustained gains in performance and innovation. Scholars and practitioners increasingly point to low employee engagement, internal misalignment, and fragmented change communication as primary culprits (Yap et al., 2024; Senbursa, 2023). Organizational inertia, unclear leadership signals, and limited mechanisms for knowledge flow undermine the intended outcomes of digitalization efforts (Notteboom et al., 2024; Lei et al., 2024).

Three internal drivers have emerged as critical enablers of successful transformation: internal marketing, absorptive capacity, and transformational leadership. Internal marketing (IM), when aligned with digitalization, refers to the deliberate use of internal communication, employee motivation, training & development, and cross-functional collaboration to align the workforce with digital priorities. This study conceptualizes these integrated practices as Digitalization-Driven Internal Marketing (DIM). By fostering understanding, reducing resistance, and building momentum from within, DIM establishes the foundation conditions for transformation to take root (Men & Bowen, 2017; Demir, 2022).

Absorptive capacity, rooted in organizational learning theory, refers to an organization's ability to identify, acquire, assimilate, and apply external knowledge. In the context of digital transformation, workforce-level absorptive capacity is especially critical. Employees must interpret unfamiliar technologies, convert them into contextualized insights, and embed them into core workflows. This study adopts Zahra and George's (2002) bifurcation into Potential Absorptive Capacity (PACAP), which refers to the capability to acquire and assimilate digital knowledge and Realized Absorptive Capacity (RACAP) which reflects the ability to transform and apply that knowledge to create performance outcomes (Enzmann & Moesli, 2022).

Transformational leadership (TL) introduces a behavioral lever into the change process. Leaders who communicate a compelling vision, model adaptive behav-

iors, and offer individualized support are more likely to cultivate psychological buy-in and knowledge-sharing behaviors during transformation. Prior studies suggest that TL can amplify the effects of internal marketing and facilitate stronger knowledge integration across teams and hierarchical levels (Bass & Riggio, 2006; Kremer et al., 2023). However, its precise moderating role remains underexplored in structured and capital-intensive sectors such as ports.

Although interest in port digitalization is growing, much of the current literature focuses on infrastructure, automation, and macroeconomic strategy. There remains a notable gap in understanding how internal, people-related mechanisms interact to influence transformation outcomes. Within the Malaysian port context, such dynamics are even less explored. Existing studies tend to overlook how internal marketing strategies, employee learning capabilities, and leadership behaviors collectively shape the success or failure of digital initiatives (Ruel et al., 2021; Ahmed et al., 2024).

This study aims to address this empirical gap. It investigates how internal marketing, absorptive capacity, and transformational leadership collectively drive digital transformation outcomes across major Malaysian ports. While prior studies have examined these variables individually, few have integrated them within a unified model, particularly in emerging-market infrastructure environments. Accordingly, this study poses three research questions (RQ):

RQ1: How does digitalization-driven internal marketing influence organizational transformation performance in Malaysian port operators?

RQ2: To what extent does workforce absorptive capacity mediate the relationship between internal marketing and transformation performance?

RQ3: Does transformational leadership moderate the relationship between (a) internal marketing and transformation performance, and (b) absorptive capacity and transformation performance?

To enhance conceptual clarity, this study defines three core constructs central to digital transformation in the port sector. First, Digitalization-Driven Internal Marketing (DIM) refers to the use of structured internal initiatives such as training, rewards, communication, and interdepartmental collaboration, which is aimed at embedding digital values and behaviors across the organization. Second, Potential Absorptive Capacity (PACAP) reflects an organization's capability to acquire and assimilate digital knowledge. Third, Realized Absorptive Capacity (RACAP) denotes the ability to transform and exploit such knowledge to improve operational performance and innovation. These constructs, rooted in internal marketing and dynamic capabilities theory, form the conceptual backbone of the proposed research model (**Table 1**).

This paper contributes to the digital transformation research by integrating internal marketing, absorptive capacity, and leadership theory into a unified, capability-driven framework. It extends the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) by demonstrating how workforce-centric mechanisms activate strategic change in one of the most operationally intensive and economi-

cally significant sectors. For practitioners, the findings offer a practical roadmap to translate digital investments into organizational performance by strengthening the human enablers of transformation.

Table 1. Summary of core constructs.

Construct	Definition	Core References
DIM	Structured internal efforts (training, communication, collaboration, rewards) to embed digitalization values and drive change readiness.	Men & Bowen (2017); Demir (2022)
PACAP	Ability to acquire and assimilate digital knowledge.	Zahra & George (2002)
RACAP	Ability to transform and exploit digital knowledge for organizational outcomes.	Zahra & George (2002)

2. Literature Review and Hypotheses Development

This paper contributes to the digital transformation research by integrating internal marketing, absorptive capacity, and leadership theory into a unified, capability-driven framework. It extends the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) by demonstrating how workforce-centric mechanisms activate strategic change in one of the most operationally intensive and economically significant sectors. For practitioners, the findings offer a practical roadmap to translate digital investments into organizational performance by strengthening the human enablers of transformation.

2.1. Theoretical Background

This study is grounded in three interrelated theoretical lenses: the Resource-Based View (RBV), Dynamic Capabilities Theory, and Transformational Leadership Theory. Together, these perspectives on how internal workforce capabilities, learning systems, and leadership behaviors converge to shape transformation performance in digitalizing port environments.

The Resource-Based View (RBV) posits that firms gain sustainable competitive advantage through the strategic utilization of valuable, rare, inimitable, and non-substitutable (VRIN) internal resources (Barney, 1991). In this study, Digitalization-Driven Internal Marketing (DIM) is conceptualized as a workforce-oriented internal resource; comprising training, communication, cross-functional collaboration and rewards; that strengthens employee engagement and strategic alignment, during transformation.

Complementing RBV, Dynamic Capabilities Theory (DCT) emphasizes a firm's ability to integrate, reconfigure and deploy internal and external competencies to adapt in rapidly evolving environments (Teece et al., 1997). In this context, absorptive capacity is viewed as a dynamic capability that enables organizations to learn from external digital trends. Following Zahra and George's (2022) framework, this study distinguishes between Potential Absorptive Capacity (PACAP), which captures a firm's ability to acquire and assimilate knowledge, and Realized

Absorptive Capacity (RACAP), which reflects the firm's capacity to transform and apply knowledge operationally.

The third lens, Transformational Leadership Theory contributes a behavioral dimension by framing leadership as a mechanism for aligning mindsets and fostering readiness for change (Bass & Bass Bernard, 1985). Transformational leaders articulate a compelling vision, model adaptive behaviors, and provide individualized support. This study posits that such leadership behaviors moderate the relationship between internal marketing, learning capability, and transformation outcomes by reinforcing trust, psychological safety, and employee receptivity to change (Kremer et al., 2023; Kayyali, 2025).

These three theoretical perspectives underpin the study's conceptual model, in which DIM functions as a strategic internal resource, PACAP and RACAP represent learning-based dynamic capabilities, and transformational leadership serves as a contextual amplifier in shaping transformation performance.

2.2. Digitalization-Driven Internal Marketing (DIM)

Internal marketing has traditionally been defined as a strategic tool to align employees with organizational goals by treating them as internal customers and cultivating a service-oriented culture (Berry, 1981; Rafiq & Ahmed, 2000). In the era of digital transformation, this paradigm has evolved into what scholars increasingly refer to as Digitalization-Driven Internal Marketing (DIM), a workforce-centric approach that aims to prepare, motivate, and engage employees through structured digital change efforts. DIM includes initiatives such as training and development programs, transparent internal communication, digital-aligned incentive mechanisms, and cross-functional collaboration, which collectively build psychological commitment and cognitive alignment (Men & Bowen, 2017).

Recent literature underscores that DIM is especially critical in digitally transforming sectors, such as ports, where automation, data-driven operations and end-to-end supply chain visibility can trigger uncertainty and resistance among the workforce (Sharma et al., 2024). In such high-complexity environments, DIM functions not merely as an HR instrument but as a strategic lever for embedding transformation logic and digital values at all organizational levels. For example, Hernández-Díaz et al. (2017) showed that targeted internal messaging and structured learning interventions significantly improved adoption of port digitalization systems in Latin American. Similarly, studies in logistics and maritime domains demonstrate that when employees are treated as active stakeholders in digital change, their engagement and innovation behavior tend to increase measurably (Enzmann & Moesli, 2022; Chan & Abdellah, 2023).

Despite growing recognition of DIM's relevance, empirical studies that examine its impact, particularly in emerging markets like Southeast Asia, remain limited. Prior research has tended to examine internal marketing in isolation, overlooking how it interacts with organizational learning capabilities or leadership behaviors in transformation contexts. This leaves a gap in understanding how DIM

contributes not only to mindset alignment but also to measurable transformation outcomes. To address this, the present study conceptualizes DIM as a second-order construct encompassing four key dimensions: Training & Development, Motivation & Reward, Communication, and Internal Relations. These dimensions are theorized to collectively enhance employees' ability to acquire, assimilate and apply digital knowledge, while also exerting a direct influence on transformation performance. Based on this theoretical framing, the following hypotheses are proposed:

H1: Digitalization-Driven Internal Marketing (DIM) significantly influences Workforce Absorptive Capacity.

H2: Digitalization-Driven Internal Marketing (DIM) significantly influences Organizational Transformation Performance.

2.3. Workforce Absorptive Capacity (PACAP & RACAP)

Absorptive capacity (AC) refers to an organization's ability to identify, assimilate, transform, and apply external knowledge for competitive advantage (Cohen & Levinthal, 1990). In digital transformation contexts, AC functions as a dynamic capability that determines whether investments in technology translate into meaningful organization-wide improvements in operations and performance (Lane et al., 2006). Building on Zahra and George's (2002) seminal framework, this study adopts a two-dimensional: Potential Absorptive Capacity (PACAP) reflects the organization's capability to acquire and assimilate external knowledge, while Realized Absorptive Capacity (RACAP) refers to the ability to transform and exploit that knowledge for business outcomes.

Recent literature emphasizes that absorptive capacity is not confined to the firm-level but also manifests within individuals and teams, especially those directly engaged in implementing change (Todorova & Durisin, 2007; Ruel et al., 2021). This distinction is particularly salient in high-reliability environments such as ports, where both top-down strategy and bottom-up employee engagement are necessary for digital transformation success. For instance, Yang et al. (2024) compared digital transformation practices across five smart ports (Hamburg, Rotterdam, Singapore, Shanghai, and Kaohsiung) and found that employee acceptance and frontline engagement were among the most critical barriers to implementation. Resistance from experienced dock workers and insufficient training systems hindered the full realization of technology benefits.

In the Malaysian port context, evidence similarly points to a gap between digital readiness and effective knowledge integration. While PACAP exists in the form of training modules and digital onboarding, RACAP which reflected in the capacity to convert learning into process improvement and service innovation is remain underdeveloped (Iberahim et al., 2024; Ahmed et al., 2024). This "absorption bottleneck" between awareness and execution weakens the link between digital investment and transformation outcomes.

To explore this relationship empirically, the study posits that PACAP will sig-

nificantly influence both RACAP and transformation performance, while RACAP will serve as a key driver of applied innovation and change. Accordingly, the following hypotheses are proposed:

H3a: Potential Absorptive Capacity (PACAP) significantly Influences Realized Absorptive Capacity (RACAP).

H3b: Realized Absorptive Capacity (RACAP) significantly influences Organizational Transformation Performance.

H3c: Potential Absorptive Capacity (PACAP) significantly influences Organizational Transformation Performance.

2.4. Mediating Role of Absorptive Capacity

While Digitalization-Driven Internal Marketing (DIM) may exert a direct influence on transformation outcomes, its full effect is often transmitted through internal capability-building mechanisms, particularly workforce absorptive capacity. In digital environments, it is not sufficient for employees to be informed or motivated; they must also possess the cognitive and operational ability to learn, adapt, and apply new knowledge meaningfully.

Absorptive capacity serves as a behavioral conduit through which strategic communication and engagement efforts are transformed into practical outcomes (Zahra & George, 2002; Jansen et al., 2009). Specifically, Potential Absorptive Capacity (PACAP) allows employees to identify and assimilate new external information, while Realized Absorptive Capacity (RACAP) enables the transformation and exploitation of that knowledge into improved systems, processes and behaviors.

Recent research underscores the importance of learning mechanisms as critical enablers of internal marketing effectiveness. For instance, Enzmann & Moesli (2022) and Ruel et al. (2021) argue that internal marketing alone may have limited impact unless paired with organizational capabilities that allow knowledge to be absorbed and applied. This perspective positions absorptive capacity not merely as a complementary factor, but as a mediating mechanism that links workforce engagement efforts to tangible performance outcomes.

Moreover, building on Zahra and George's (2002) two-stage conceptualization, this study explores a sequential mediation model: DIM is theorized to enhance PACAP, which in turn facilitates RACAP, thereby enabling transformation outcomes. This cascading logic reflects how training, communication, and collaboration initially promote knowledge access (PACAP), which is then operationalized through behavioral and procedural change (RACAP). Understanding this pathway provides deeper insight into how human and organizational capital jointly contribute to digital transformation success. Accordingly, the following hypotheses are proposed.

H4: PACAP and RACAP sequentially mediate the relationship between DIM and Organizational Transformation Performance (OTP).

H4a: PACAP mediates the relationship between DIM and OTP.

H4b: RACAP mediates the relationship between DIM and OTP via PACAP (sequential mediation).

2.5. Transformational Leadership (TL) as a Moderator

Transformational Leadership (TL) refers to leadership style characterized by the ability to inspire and intellectually stimulate followers, while acting as a role model through idealized influence (Bass & Riggio, 2006). In the context of digital transformation, transformational leaders create environments of trust, adaptability, and shared purpose that enable organizations to respond effectively to change (Kremer et al., 2023; Ghasabeh et al., 2023).

Rather than supervising digital initiatives, transformational leaders actively shape the cultural and psychological conditions under which change can take root. They articulate a compelling vision, model desired behaviors, and foster a sense of collective identity. This behavioral influence is especially important in complex and asset-intensive environments such as ports, where employees may be hesitant to adopt disruptive technologies without strong leadership support.

In this study, transformational leadership is conceptualized as a moderating variable, a contextual force that may strengthen or weaken the effects of both Digitalization-Driven Internal Marketing (DIM) and workforce absorptive capacity on transformation performance. Leaders who demonstrate transformational behaviors can amplify the impact of DIM by reinforcing the values communicated through internal campaigns, building emotional buy-in, and ensuring consistency between rhetoric and action. This alignment may help employees interpret internal marketing efforts as authentic and meaningful, thereby deepening their commitment to digital initiatives.

Moreover, transformational leaders play a critical role in enabling absorptive capacity by fostering a psychologically safe climate that encourages experimentation, inquiry, and knowledge application (Edmondson & Lei, 2014; Zhu & Zhang, 2022). By supporting risk-taking and modelling continuous learning, they facilitate the conversion of acquired knowledge (PACAP) into realized outcomes (RACAP). Despite growing interest in leadership's role in change processes, empirical research on transformational leadership as a moderator, particularly in port transformation context remains limited and under-theorized. Accordingly, the following hypotheses are proposed:

H5a: Transformational leadership moderates the relationship between Digitalization-Driven Internal Marketing (DIM) and Organizational Transformation Performance (OTP).

H5b: Transformational leadership moderates the relationship between DIM and Potential Absorptive Capacity (PACAP).

H5c: Transformational leadership moderates the relationship between Realized Absorptive Capacity (RACAP) and OTP.

2.6. Conceptual Framework and Summary of Hypotheses

This study proposes an integrated conceptual framework that connects Digitali-

zation Internal Marketing (DIM), Workforce Absorptive Capacity (PACAP and RACAP), and Transformational Leadership (TL) to explain their combined influence on Organizational Transformation Performance (OTP) in the port sector. Anchored in the Resource-Based View (RBV), Dynamic Capability Theory, Transformational Leadership Theory, and Social Exchange Theory, the model conceptualizes DIM as a strategic internal resource that promotes change readiness, knowledge engagement and digital alignment across the workforce.

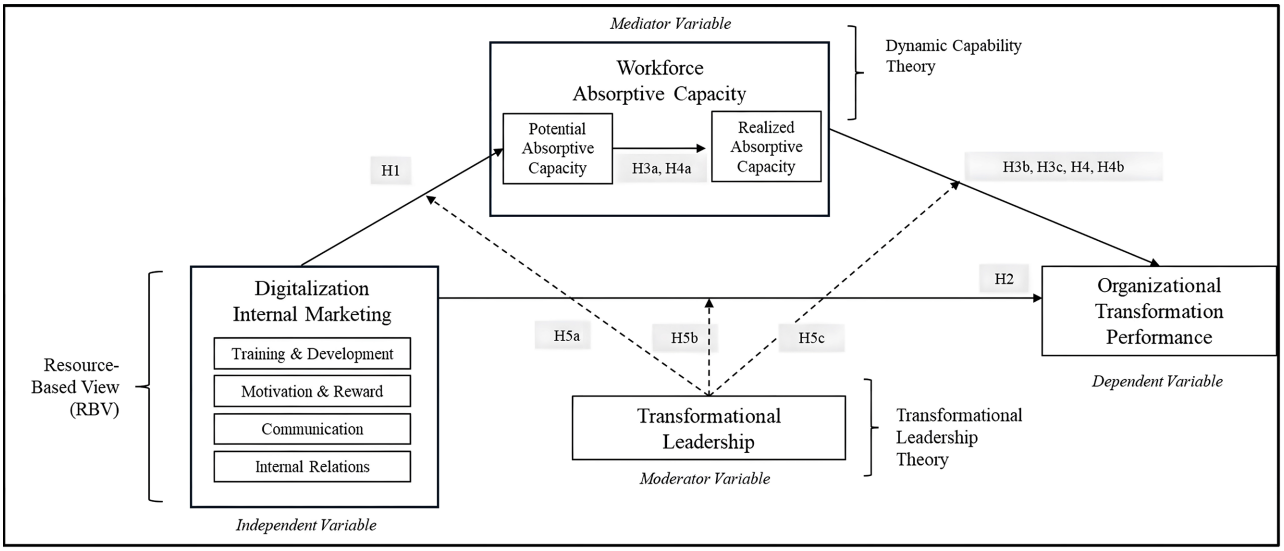

Figure 1. Conceptual framework diagram.

Table 2. Summary of research hypotheses.

Hypothesis	Statement
H1	Digitalization-Driven Internal Marketing (DIM) significantly influences Potential Absorptive Capacity (PACAP).
H2	Digitalization-Driven Internal Marketing (DIM) significantly influences Organizational Transformation Performance (OTP).
H3a	PACAP significantly influences Realized Absorptive Capacity (RACAP).
H3b	RACAP significantly influences OTP.
H3c	PACAP significantly influences OTP.
H4	PACAP and RACAP sequentially mediate the relationship between DIM and OTP.
H4a	PACAP mediates the relationship between DIM and OTP.
H4b	RACAP positively mediates the relationship between DIM and OTP via PACAP (sequential mediation).
H5a	Transformational Leadership moderates the relationship between DIM and OTP.
H5b	Transformational Leadership moderates the relationship between DIM and PACAP.
H5c	Transformational Leadership moderates the relationship between RACAP and OTP.

DIM is hypothesized to exert both a direct effect on OTP (H2) and an indirect effect through absorptive capacity (H1, H4, H4a, H4b). Workforce absorptive capacity is modelled as a second-order construct, comprising two key dimensions: Potential Absorptive Capacity (PACAP), representing the ability to acquire and assimilate knowledge, and Realized Absorptive Capacity (RACAP), representing the ability to transform and apply that knowledge in operational settings. PACAP is expected to significantly influence RACAP (H3a) and both are theorized to contribute to OTP, through direct effects (H3b, H3c) and sequential mediation (H4).

Transformational Leadership (TL) is introduced as a moderating construct that may amplify the effects of DIM and absorptive capacity on performance. TL is hypothesized to strengthen three specific pathways: the relationship between DIM and PACAP (H5a), DIM and OTP (H5b) and RACAP and OTP (H5c). These interactions reflect the behavioral role of leadership in shaping how digital strategies are received, internalized, and enacted by employees. **Figure 1** illustrates the conceptual framework, depicting all hypothesized relationships. It offers a multidimensional view of how internal marketing practices, learning capabilities, and leadership dynamics interact to influence transformation performance within digitally evolving port organizations (**Table 2**).

3. Methodology

3.1. Research Design

This study adopts a quantitative, explanatory research design to empirically examine the relationships between Digitalization-Driven Internal Marketing (DIM), Potential Absorptive Capacity (PACAP), Realized Absorptive Capacity (RACAP), Transformational Leadership (TL), and Organizational Transformation Performance (OTP). The study is grounded in positivist epistemology, which seeks to test theory-driven hypotheses through objective measurement and inferential statistics.

Given the conceptual model's complexity; featuring second-order constructs, sequential mediation and moderation effects; Partial Least Squares Structural Equation Modelling (PLS-SEM) was selected as the primary analytical technique's-SEM is particularly suited to models with formative and reflective constructs, is robust to non-normal data distribution and performs well with moderate sample sizes (Hair et al., 2022). It also supports theory extension and exploratory paths, making it appropriate for relatively underexplored transformation phenomena in emerging sectors.

The empirical context for this study is the Malaysian port industry, an environment experiencing ongoing digitalization pressures while grappling with capability gaps in workforce readiness and strategic alignment. Data was collected from four major ports under MMC Port Holdings Berhad, providing a relevant and high-impact setting for examining how human-centered factors influence transformation outcomes in complex, asset-intensive organizations.

3.2. Population and Sample

The study focused on employees from four major Malaysian ports under MMC Port Holdings Berhad: Port of Tanjung Pelepas (PTP), Johor Port, Penang Port, and Tanjung Bruas Port. The target population comprised managerial and executive-level who were actively involved in strategic decision-making, policy execution or digital transformation initiatives within their respective organizations. This sampling approach ensured that respondents possessed the requisite contextual insight to evaluate internal practices, absorptive processes and transformation outcomes.

A total of 219 usable responses were collected through a structured online questionnaire administered over a six-week period. Based on PLS-SEM methodological guidance, this sample size exceeds the minimum thresholds for complex models with multiple latent variables and interaction terms (Hair et al., 2019; Kock, 2022). The sample meets the "minimum R^2 rule" and "10-times rule" standards, particularly considering the study's highest-order construct involves up to five indicators and includes mediating and moderating paths.

Survey distribution was facilitated by Human Resource representatives at each port, who acted solely as administrative conduits to circulate the instrument via internal communication channels. Respondents were assured of complete confidentiality and anonymity, and participation was strictly voluntary. The study was conducted in accordance with ethical research standards and received data collection approval from the Putra Business School.

Additionally, the focus on managerial and white-collar personnel was shaped in part by technical accessibility constraints, as only these groups were equipped with corporate email credentials (e.g., Microsoft 365 licenses) required for receiving and accessing the digital survey platform. While this approach enhanced response efficiency and data completeness, it may under-represent the perspectives of front-line operational staff, whose exposure to digital tools may differ. This trade-off is acknowledged, and future studies are encouraged to adopt multi-level or multi-group sampling strategies to capture a broader spectrum of perspectives. It is also recommended to employ paper-based instruments, kiosks, or mobile-enabled field surveys to capture insights from broader employee segments.

3.3. Instrument Development

The survey instrument was developed by adapting established measurement items from prior studies to align with the context of digital transformation in Malaysian port operations. All constructs were measured using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

- **Digitalization-Driven Internal Marketing (DIM)** was conceptualized as a second-order construct composed of four reflective dimensions: Training & Development, Motivation & Reward, Communication, and Internal Relations. Items for these dimensions were adapted from Yap et al. (2024) and Demir A. (2022), with wording adjusted to reflect internal engagement in technology-

related change initiatives within port organizations.

- **Absorptive Capacity** was operationalized using Zahra and George's (2002), two-dimensional framework: Potential Absorptive Capacity (PACAP) and Realized Absorptive Capacity (RACAP). Scale items for PACAP were drawn from Jansen et al. (2009), while RACAP items were sourced from Leal-Rodríguez et al. (2014), with contextual refinements made to reflect learning processes related to digital system onboarding and operational integration in port terminals.
- **Transformational Leadership (TL)** was measured using eight items representing its four core dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These items were adapted from Bass & Riggio (2006), ensuring relevance to the leader-subordinate dynamic in digitally transforming work environments.
- **Organizational Transformation Performance (OTP)** was captured using six items reflecting perceived progress in strategic alignment, process improvement, service responsiveness and digital adoption. These items were adapted from Ruel et al. (2021) and Zahra & George (2002), and revised to suit the port logistics and infrastructure sector.

To ensure validity and contextual relevance, a four-step adaptation process was employed: (1) literature-based item selection; (2) expert review by two academic scholars and two port-sector HR practitioners; (3) cognitive interviews with five managerial employees to assess clarity; and (4) a pilot test involving 41 respondents from the participating ports. Based on pilot feedback, minor modifications were made to item phrasing to improve clarity and alignment with organizational language. Pilot test results indicated acceptable reliability, with Cronbach's alpha values exceeding 0.80 across all constructs.

3.4. Data Analysis Strategy

The data were analyzed using SmartPLS 4.0, a variance-based structural equation modelling (PLS-SEM) software that supports the estimation of both reflective and formative constructs. This method was selected due to its suitability for exploratory theory testing, handling complex models with mediation and moderation effects, and its robustness with small to medium sample sizes and non-normal data distributions (Hair et al., 2022). A two-stage approach was adopted, consistent with the best practices in PLS-SEM studies:

1) **Measurement Model Evaluation (Outer Model Assessment):** This step assessed the reliability and validity of the latent constructs. Indicator reliability was evaluated via outer loadings, while internal consistency was examined using Cronbach's alpha and Composite Reliability (CR). Convergent validity was tested through Average Variance Extracted (AVE), and discriminant validity was assessed using both the Fornell-Larcker criterion and Heterotrait-Monotrait ratio (HTMT).

2) **Structural Model Assessment (Inner Model Assessment):** The hypothe-

sized relationships were examined using standardized path coefficients (β), t-values, and *p*-values obtained through a 5000-sample bootstrapping procedure. Additional criteria, R^2 (explained variance), f^2 (effect size), and Q^2 (predictive relevance via blindfolding). Mediation was evaluated using indirect effect analysis, following Zhao et al. (2010), while moderation was tested through product indicator interaction terms.

This analytical strategy ensured the statistical rigor required to test the study's conceptual framework and to derive valid inferences about the interplay of internal marketing, absorptive capacity, and transformational leadership in shaping digital transformation outcomes.

4. Results

4.1. Respondent Profile

Data were collected from 219 respondents across four major Malaysian ports. The majority of participants were employed at Port of Tanjung Pelepas (58.9%), followed by Johor Port (34.2%), Penang Port (6.4%), and Tanjung Bruas Port (0.5%). This distribution reflects the organizational scale and workforce size of each participating port. In terms of tenure, 39.7% had over 10 years of experience, while 21.0% had between 1 - 3 years, and 18.3% had worked for 7 - 10 years. The predominance of experienced personnel enhances the reliability of responses regarding transformation-related practices.

Table 3. Demographic summary of the respondents.

Variable	Summary
Port of Employment	PTP (58.9%), Johor Port (34.2%), Penang Port (6.4%), Tanjung Bruas (0.5%)
Years with Organization	Over 10 years (39.7%), 1 - 3 years (21.0%), 7 - 10 years (18.3%)
Age Group	35 - 44 years (37.4%), 25 - 34 years (35.2%), 45 - 54 years (20.5%)
Gender	Male (54.3%), Female (45.7%)
Education Level	Bachelor's Degree (60.7%), Postgraduate (15.5%), Diploma (12.8%)
Position Level	Executive (37.4%), Senior Executive+ (31.1%), Managers+ (19.2%)
Department Type	Operations/Engineering (26.0%), HR (18.7%), Corporate Services (15.1%)
Familiarity with Digital Transformation	Somewhat familiar (70.3%), Very familiar (16.9%), Not familiar (12.8%)
Experience in Digital Transformation	No (58.0%), Yes (42.0%)
Port of Employment	PTP (58.9%), Johor Port (34.2%), Penang Port (6.4%), Tanjung Bruas (0.5%)
Years with Organization	Over 10 years (39.7%), 1 - 3 years (21.0%), 7 - 10 years (18.3%)

Note. N = 219. Percentages are rounded to one decimal place.

The sample was primarily composed of mid-career professionals, with 37.4% aged between 35 - 44 and 35.2% aged 25 - 34. Respondents aged 45 - 54 accounted for 20.5%, reflecting a balanced generational distribution. The gender composition was relatively even, with 54.3% male and 45.7% female participants.

Educationally, most respondents held at least a bachelor's degree (60.7%), while 15.5% had completed postgraduate studies. Regarding organizational roles, 37.4% were at the executive level, 31.1% held senior executive positions, and 19.2% occupied managerial or higher-level positions. These figures align with the study's sampling focus on strategic and decision-making personnel. Departmentally, the largest share of participants came from operations or engineering functions (26.0%), followed by human capital (18.7%) and corporate services (15.1%). This functional diversity supports the generalizability of findings across both technical and support units within port organizations.

In terms of digital transformation exposure, 70.3% of participants were somewhat familiar, and 16.9% were very familiar with such initiatives. However, only 42.0% reported having direct experience in digital transformation projects, suggesting that while awareness is widespread, practical involvement remains limited (Table 3).

4.2. Measurement Model Assessment

The measurement model was evaluated to establish construct reliability, convergent validity, and discriminant validity, in accordance with PLS-SEM guidelines (Hair et al., 2022). All latent constructs were modelled reflectively, and indicator reliability was assessed through standardized outer loading. Most items exceeded the recommended threshold of 0.70; a small number of exploratory indicators with loadings between 0.60 and 0.70 were retained due to theoretical importance and acceptable contribution to construct validity.

Internal consistency was confirmed through Cronbach's alpha and Composite Reliability (CR), with all constructs exceeding the 0.70 benchmark. CR values ranged from 0.85 to 0.97, indicating strong reliability across constructs. Convergent validity was verified via Average Variance Extracted (AVE), with all values above the recommended 0.50 threshold, thus confirming that each construct explained a substantial portion of its indicators' variance (see Table 4).

Table 4. Convergent validity and construct reliability results.

Construct	Cronbach's Alpha	Composite Reliability (ρA)	Composite Reliability (ρC)	Average Variance Extracted (AVE)
DIM	0.921	0.926	0.932	0.536
OTP	0.921	0.924	0.938	0.718
PACAP	0.747	0.751	0.855	0.664
RACAP	0.874	0.874	0.922	0.798
TL	0.967	0.968	0.972	0.814

Note. All values meet recommended thresholds: Cronbach's Alpha > 0.70, Composite Reliability > 0.70, AVE > 0.50.

Discriminant validity was assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. Fornell-Larcker analysis showed that the square root of each construct's AVE exceeded its highest inter-construct correlations, supporting discriminant separation. HTMT ratios were also below the conversative threshold of 0.90 for all construct pairs, further confirming discriminant validity (see Table 5).

Table 5. Discriminant validity assessment using Fornell-Larcker criterion.

Item/Construct	DIM	OTP	PACAP	RACAP	TL
DIM	0.732	—	—	—	—
OTP	0.807	0.847	—	—	—
PACAP	0.773	0.677	0.815	—	—
RACAP	0.698	0.675	0.697	0.894	—
TL	0.725	0.751	0.630	0.551	0.902

Note. Values on the diagonal represent the square root of AVE. Discriminant validity is established when diagonal values exceed corresponding inter-construct correlations.

These results affirm that the reflective constructs in the measurement model demonstrate sufficient reliability and validity, allowing for meaningful interpretation of structural relationships in the next stage of analysis.

4.3. Structural Model Evaluation

The inner (structural) model was evaluated using bootstrapping with 5,000 resamples to assess the significance and robustness of hypothesized relationships. Standardized path coefficients (β), t-values, and *p*-values were used to test direct and indirect effects, while model fit and quality were examined using R^2 and Q^2 values.

The model demonstrated strong explanatory power across its key dependent variables. It accounted for 73.5% of the variance in Organizational Transformation Performance (OTP), 61.2% in Potential Absorptive Capacity (PACAP), and 48.6% in Realized Absorptive Capacity (RACAP). According to Hair et al. (2022), R^2 values above 0.67 indicate strong explanatory power, values between 0.33 and 0.67 are substantial, and values between 0.19 and 0.33 are moderate.

Predictive relevance (Q^2) was evaluated using the blindfolding technique. Q^2 values exceeded the zero threshold for all endogenous constructs: 0.530 for OTP, 0.400 for PACAP, and 0.300 for RACAP. These results confirm that the structural model possesses moderate to strong predictive relevance, supporting its utility in forecasting outcomes in digital transformation contexts.

4.4. Direct Effects Testing

Direct relationships among the key constructs were assessed using path coefficients (β), t-values, and *p*-values obtained through bootstrapping with 5000 subsamples. Table 6 presents the results for the structural model's direct paths corre-

sponding to hypotheses H1 through H3c.

Hypothesis H1 predicted that Digitalization-Driven Internal Marketing (DIM) would positively influence Potential Absorptive Capacity (PACAP). The results support this relationship (β = 0.659, t = 10.280, $p < 0.001$), indicating that internal marketing practices significantly enhance employees' ability to acquire and assimilate digital knowledge.

Hypothesis H2 posited a direct effect of DIM on Organizational Transformation Performance (OTP). This relationship was also supported (β = 0.439, t = 5.274, $p < 0.001$), suggesting that workforce-oriented internal marketing plays a critical role in shaping digital transformation outcomes.

For H3a, the effect of PACAP on Realized Absorptive Capacity (RACAP) was tested. A strong positive relationship was found (β = 0.697, t = 18.102, $p < 0.001$), supporting Zahra and George's (2002) staged learning framework, where the assimilation of knowledge precedes its transformation and exploitation.

Hypothesis H3b predicted a significant relationship between RACAP and OTP. This path was statistically significant (β = 0.179, t = 2.388, $p = 0.017$), though the effect size was smaller compared to other direct paths. This suggests that while RACAP contributes to transformation outcomes, its impact may be mediated or contingent on other factors such as leadership or operational support.

Conversely, H3c, which proposed a direct effect of PACAP on OTP, was not supported. The path coefficient was negative and statistically insignificant (β = −0.021, t = 0.315, $p = 0.752$), indicating that knowledge acquisition and assimilation alone may not drive performance unless operationalized through RACAP or other mechanisms.

Table 6. Direct path coefficients and hypothesis results.

Hypothesis	Path	β	t-value	*p*-value	Result
H1	DIM → PACAP	0.659	10.280	0.000	Supported
H2	DIM → OTP	0.439	5.274	0.000	Supported
H3a	PACAP → RACAP	0.697	18.102	0.000	Supported
H3b	RACAP → OTP	0.179	2.388	0.017	Supported
H3c	PACAP → OTP	−0.021	0.315	0.752	Not Supported

4.5. Mediation Analysis

To examine the mediating role of absorptive capacity, indirect effects were tested using bootstrapping with 5000 resamples, following the approach recommended by Zhao et al. (2010). The analysis focused on three hypothesized mediation paths: direct PACAP mediation (H4a), PACAP → RACAP chain mediation (H4b), and sequential mediation through both (H4).

Hypothesis H4a proposed that PACAP would mediate the relationship between Digitalization-Driven Internal Marketing (DIM) and Organizational Transformation Performance (OTP). This path was not supported (β = −0.014, t = 0.313,

p = 0.754), indicating that knowledge acquisition and assimilation alone do not serve as a sufficient mediating mechanism in translating internal marketing into transformation performance.

Hypothesis H4b tested the indirect effect of DIM on Realized Absorptive Capacity (RACAP) via PACAP. This mediation path was statistically significant and substantial (β = 0.459, t = 8.223, p < 0.001), supporting the theorized role of PACAP as a foundation for effective knowledge transformation and application.

Hypothesis H4 tested the full sequential mediation pathway—DIM → PACAP → RACAP → OTP. This indirect effect was significant (β = 0.082, t = 2.223, p = 0.026), confirming that the influence of internal marketing on transformation performance is partially channeled through a two-stage learning process involving both PACAP and RACAP. This supports Zahra and George's (2002) staged absorptive capacity model and suggests that transformation outcomes emerge not from initial awareness alone, but from the structured operationalization of that knowledge (Table 7).

Table 7. Mediation path results.

Hypothesis	Indirect Path	β	t-value	p-value	Result
H4	DIM → PACAP → RACAP → OTP	0.082	2.223	0.026	Supported (Mediation)
H4a	DIM → PACAP → OTP	−0.014	0.313	0.754	Not Supported
H4b	DIM → PACAP → RACAP	0.459	8.223	0.000	Supported (Mediation)

Note. β = standardized path coefficient. A p-value < 0.05 indicates statistical significance. Mediated effects are tested using bootstrapping (5000 resamples).

4.6. Moderation Analysis

The moderating role of Transformational Leadership (TL) was examined across three hypothesized paths using interaction term analysis in PLS-SEM. Interaction effects were modeled using the product indicator approach, with significance determined via bootstrapping (5000 resamples). Table 8 summarizes the results.

Table 8. Moderation results for transformational leadership.

Hypothesis	Interaction Path	β	t-value	p-value	Result
H5a	TL × DIM → PACAP	−0.051	1.159	0.246	Not Supported
H5b	TL × DIM → OTP	−0.045	0.859	0.390	Not Supported
H5c	TL × RACAP → OTP	−0.031	0.515	0.606	Not Supported

Hypothesis H5a proposed that TL would moderate the relationship between Digitalization-Driven Internal Marketing (DIM) and Potential Absorptive Capacity (PACAP). This interaction effect was not statistically significant (β = −0.051, t = 1.159, p = 0.246), suggesting that transformational leadership does not meaningfully influence how internal marketing initiatives translate into knowledge ac-

quisition capabilities.

Hypothesis H5b tested whether TL moderates the relationship between DIM and Organizational Transformation Performance (OTP). This interaction was also not supported (β = −0.045, t = 0.859, p = 0.390), indicating that the direct impact of DIM on transformation outcomes is not significantly conditioned by the presence of transformational leadership behaviors.

Hypothesis H5c assessed whether TL moderates the relationship between Realized Absorptive Capacity (RACAP) and OTP. This path also yielded a non-significant result (β = −0.031, t = 0.515, p = 0.606), suggesting that leadership style does not significantly influence the effectiveness of knowledge application in delivering transformation results.

Collectively, these findings suggest that transformational leadership may exert an independent (main) effect rather than a conditional (moderating) one within highly structured, hierarchical environments like ports. The lack of moderation could reflect environmental rigidity, uniform leadership practices, or ceiling effects in leadership perception. Future research may explore potential non-linear or multi-group moderation effects.

This Figure 2 presents the final structural model with standardized path coefficients. It visually represents the strength and significance of relationships tested in the PLS-SEM analysis, including direct, mediating, and moderating effects.

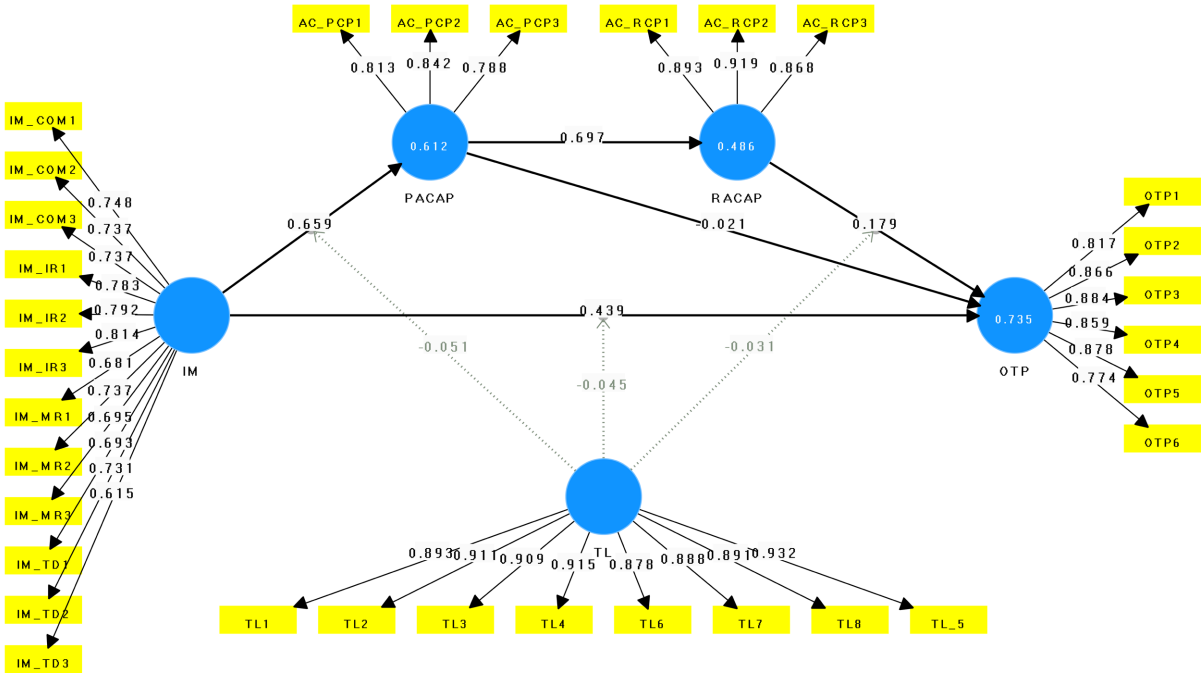

Figure 2. Final structural model with path coefficients.

5. Discussion

5.1. Overview of Key Findings

This study investigated how Digitalization-Driven Internal Marketing (DIM), ab-

sorptive capacity; operationalized through Potential Absorptive Capacity (PACAP) and Realized Absorptive Capacity (RACAP); and Transformational Leadership (TL) interact to influence Organizational Transformation Performance (OTP) within Malaysian ports. The findings reveal that DIM exerts a dual influence: it significantly enhances PACAP, highlighting its role in strengthening employees' ability to acquire and assimilate digital knowledge, and it also directly contributes to OTP, reinforcing the strategic value of internal engagement mechanisms in driving transformation performance.

PACAP was found to significantly influence RACAP, supporting Zahra and George's (2002) sequential absorptive capacity model, where the learning process begins with acquisition and culminates in application. However, PACAP had no direct effect on OTP, suggesting that its contribution to transformation is mediated through its influence on RACAP. In contrast, RACAP demonstrated a significant positive effect on OTP, affirming its role in converting internalized knowledge into process improvements, alignment, and innovation.

Importantly, the sequential mediation pathway; DIM → PACAP → RACAP → OTP; was statistically supported, establishing absorptive capacity as a critical explanatory mechanism through which internal marketing contributes to transformation outcomes. This finding aligns with the Dynamic Capabilities Theory, emphasizing that performance gains in digital transformation are contingent on learning and application processes within the workforce.

Conversely, no significant moderating effects were observed for Transformational Leadership across the tested paths. While TL was theorized to strengthen the influence of DIM and RACAP on OTP, the results suggest that its effect may be either direct, indirect through other mechanisms, or contextually constrained. In hierarchical and asset-intensive environments such as ports, leadership may not operate as a conditional amplifier but rather as a stable enabler of baseline readiness.

5.2. Theoretical Implications

This study offers several theoretical contributions to the literature on organizational transformation in digital contexts, particularly within the under-explored domain of port logistics in emerging economies.

First, the findings extend internal marketing theory by empirically validating its dual role, both in directly influencing transformation outcomes and in activating workforce absorptive capacity as a dynamic capability. Unlike prior studies that conceptualize internal marketing primarily as an HR or employee engagement tool, this study positions it as a strategic internal enabler of digital adaptation. By embedding internal marketing within a transformation-focused capability framework, the study elevates its theoretical positioning from operational support to change acceleration.

Second, the study reinforces and refines the two-dimensional structure of absorptive capacity; Potential (PACAP) and Realized (RACAP); by demonstrating

their sequential relationship. The confirmed mediation pathway (DIM → PACAP → RACAP → OTP) provides empirical support for the staged absorptive process proposed by Zahra and George (2002) and expanded by Todorova and Durisin (2007). This finding adds theoretical depth to Dynamic Capabilities Theory (DCT) by clarifying how internal alignment mechanisms (via PACAP) are operationalized into performance outcomes (via RACAP), particularly in digital transformation contexts.

Third, the study contributes to Transformational Leadership Theory by challenging assumptions of universal or uniform moderating effects. Despite its theorized role as a contextual amplifier, transformational leadership did not significantly moderate key relationships, suggesting that its influence may be more direct or mediated, rather than conditional. This nuance supports emerging leadership research that calls for contingency-based views of leadership effectiveness in complex digital environments (Kremer et al., 2023). By integrating TL into a moderated mediation framework, the study nuances our understanding of leadership's influence, not as a static enhancer, but as a dynamic input in capability development.

Lastly, this study presents a theoretically integrated model that unifies internal marketing, absorptive capacity, and transformational leadership within single explanatory framework for organizational transformation performance. This people-centric conceptualization contrasts with traditional port transformation models that emphasize operational technology, automation, or infrastructure. The integration of psychological, behavioral, and capability-based constructs broadens the theoretical discourse on digital transformation by foregrounding the human enablers of strategic change. As such, this model offers a novel contribution to both port literature and broader organizational change theory.

5.3. Practical Implications

Beyond theoretical contributions, the findings offer important takeaways for industry practitioners navigating digital transformation in operational environments such as ports. The findings of this study offer actionable insights for port operators, transformation leaders, and policymakers seeking to enhance the success of digitalization initiatives within asset-heavy, people-intensive environments.

First, the strong effect of digitalization internal marketing (DIM) on both Potential Absorptive Capacity and Organizational Transformation Performance suggests that digital strategy execution must be accompanied by internal marketing campaigns that go beyond communication. Structured efforts to train, incentivize, and emotionally align employees with digital goals are essential. Port authorities should invest not only in technology but in internal readiness systems that build awareness, engagement, and commitment from within.

Second, the validated mediating role of absorptive capacity (PACAP → RACAP) highlights the importance of capability sequencing. It is not sufficient to expose

employees to new knowledge or technologies; organizations must also create mechanisms for converting that knowledge into operational practices. This points to the need for bridging mechanisms such as cross-functional learning teams, digital champions, and feedback loops to support both assimilation and application phases of transformation.

Third, although Transformational Leadership did not moderate internal relationships, its direct influence on PACAP and OTP confirms its role as an upstream enabler of digital momentum. Leadership development should focus on behaviors that model adaptability, encourage psychological safety, and sustain learning environments. However, the lack of moderation suggests that leadership's role is not to amplify, but to initiate and sustain internal alignment and learning capacity. Organizations should therefore focus leadership development on behaviors that embed change capacity, not just charisma or communication.

Finally, the proposed framework reinforces the idea that digital transformation is fundamentally human transformation. For port operators balancing automation goals with workforce realities, this study underscores the strategic value of people-centric change architecture, the one that synchronizes internal marketing, leadership, and learning capacity into a cohesive system of transformation. Industry actors who operate these dimensions in tandem will be better positioned to turn digital vision into sustained performance.

5.4. Limitations and Directions for Future Research

While the results are compelling, it is important to acknowledge several methodological and contextual limitations that may inform future research.

First, the research is cross-sectional in nature, which limits the ability to make strong causal inferences. Although structural equation modelling (SEM) provides robust analytical depth, future studies could adopt longitudinal or experimental designs to capture the evolving nature of internal capabilities and transformation performance over time.

Second, the study is confined to Malaysian port operators under a single corporate group, which, while enhancing contextual depth, may constrain generalizability. Cultural, regulatory, and organizational dynamics unique to Malaysia could influence perceptions of leadership, internal marketing, and digital readiness. Future research should expand the geographic and institutional scope, including ports in other ASEAN or emerging market economies to test the model's robustness across varying transformation maturity levels.

Third, while the study integrates three core constructs (Digitalization-Driven Internal Marketing, Absorptive Capacity, and Transformational Leadership), another relevant enabler may exist. Variables such as organizational culture, digital infrastructure readiness, technological turbulence, or stakeholder influence could moderate or mediate transformation outcomes. Future scholars are encouraged to extend the model by incorporating such contextual or environmental contingencies to better reflect real-world complexity.

Lastly, the current study relied solely on self-reported survey data, which, despite procedural remedies for common method bias, may still carry risks of subjectivity or social desirability bias. Future studies could enhance validity through multi-source data, including qualitative interviews, HR analytics, transformation KPIs, or digital project dashboards to triangulate insights and validate behavioral claims.

By addressing these limitations, future research can build on this study's theoretical foundation to further unpack the mechanisms by which internal alignment, capability-building, and leadership interact to shape organizational transformation in digital-era port ecosystems.

6. Conclusion

This study investigated how Digitalization-Driven Internal Marketing (DIM), Absorptive Capacity (PACAP and RACAP), and Transformational Leadership (TL) jointly shape digital transformation performance within Malaysian port operations. Grounded in the Resource-Based View and Dynamic Capabilities Theory, the findings underscore that internal marketing is not merely a communication function, but a strategic enabler that catalyzes both direct transformation outcomes and the development of internal learning capacity.

The confirmed mediation pathway from DIM through PACAP and RACAP to Organizational Transformation Performance affirms that transformation success depends not only on technology access, but on the workforce's ability to internalize and apply knowledge. This highlights the central role of absorptive capacity as a behavioral mechanism that bridges strategy and execution.

While Transformational Leadership did not function as a moderator in this context, its direct effects on learning capability and transformation performance suggest that leadership still plays a critical role, more as a catalyst for readiness than as an amplifier of internal systems. In structured, capital-intensive environments such as ports, leadership may operate through culture-shaping and trust-building rather than adaptive modulation.

The integrated framework developed in this study offers a people-centric lens for understanding digital transformation, combining internal marketing, learning capacity, and leadership into a cohesive organizational change model. For scholars, it provides a theoretical architecture that bridges organizational behavior and strategic transformation. For practitioners, it outlines a practical roadmap for building alignment, capability, and trust in high-stakes transformation environments.

As global ports contend with the twin pressures of automation and agility, this study reinforces a critical insight: successful transformation begins not with systems or infrastructure, but with people.

Declarations

During the preparation of this work the author(s) used Microsoft Copilot, Per-

plexity AI, Google's Gemini and OpenAI's ChatGPT in order to brainstorm ideas, enhance readability, and improve brevity. After using this tool/service, the author(s) reviewed and edited the content as needed and took full responsibility for the content of the publication.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Ahmed, F., Naqshbandi, M. M., Waheed, M., & Ain, N. U. (2024). Digital Leadership and Innovative Work Behavior: Impact of LMX, Learning Orientation and Innovation Capabilities. *Management Decision, 62,* 3607-3632. https://doi.org/10.1108/MD-04-2023-0654

Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management, 17,* 99-120. https://doi.org/10.1177/014920639101700108

Bass, B. M., & Bass Bernard, M. (1985). *Leadership and Performance beyond Expectations* (Vol. 25, No. 3, pp. 481-484). Free press.

Bass, B. M., & Riggio, R. E. (2006). *Transformational Leadership* (2nd ed.). Lawrence Erlbaum Associates. https://doi.org/10.4324/9781410617095

Berry, L. L. (1981). The Employee as Customer. *Journal of Retail Banking, 3,* 33-40.

Chan, S. C., & Abdellah, M. (2023). Internal Branding and Leadership as Synergistic Drivers of Workforce Alignment in Digital Transformation. *Asia Pacific Business Review, 29,* 203-224.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly, 35,* 128-152. https://doi.org/10.2307/2393553

Demir, A. (2022). Impact of Internal Marketing on Customer Perceptions in SMEs. *International Journal of Services and Operations Management, 42,* 379-396. https://doi.org/10.1504/IJSOM.2022.124275

Edmondson, A. C., & Lei, Z. (2014). Psychological Safety: The History, Renaissance, and Future of An Interpersonal Construct. *Annual Review of Organizational Psychology and Organizational Behavior, 1,* 23-43. https://doi.org/10.1146/annurev-orgpsych-031413-091305

Enzmann, P., & Moesli, M. (2022). Seizing Opportunities: ASEAN Country Cluster Readiness in Light of The Fourth Industrial Revolution. *Asia and The Global Economy, 2,* Article 100021. https://doi.org/10.1016/j.aglobe.2021.100021

Ghasabeh, M. S., Soosay, C., & Reaiche, C. (2023). Leadership Capabilities in The Face of Digital Transformation. *International Journal of Organizational Analysis, 31,* 387-406.

Hair, J. F., Howard, M. C., & Nitzl, C. (2022). Assessing Measurement Model Quality in PLS-SEM Using Confirmatory Composite Analysis. *Journal of Business Research, 139,* 712-728.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). SAGE Publications. https://doi.org/10.3926/oss.37

Hernández-Díaz, A., Campos-González, M., & Salas-Contreras, J. (2017). Enhancing Employee Alignment in Digital Initiatives: Evidence from Latin American Port Terminals.

Maritime Policy & Management, 44, 621-638.

Iberahim, H., Albashri, N. Z., Warnoh, I. E., Rushdan, A., & Matsuura, Y. (2024). Port Digitalization: Technology Readiness Assessment and Segmentation Profile of Malaysian Port Operators. *Journal of Sustainability Science and Management, 19,* 103-121. https://doi.org/10.46754/jssm.2024.11.007

Jansen, J. J. P., Van Den Bosch, F. A. J., & Volberda, H. W. (2009). Managing Potential and Realized Absorptive Capacity: How Do Organizational Antecedents' Matter? *Academy of Management Journal, 52,* 1181-1194.

Kayyali, M. (2025). Leadership's Role in Fostering a Resilient Organizational Culture. In J. C. D. Rouco, & P. C. N. Figueiredo (Eds.), *Enhancing Resilience in Business Continuity Management* (pp. 267-294). IGI Global Scientific Publishing. https://doi.org/10.4018/979-8-3693-8809-9.ch009

Kock, N. (2022). Using Causality Assessment Indices in PLS-SEM. *Data Analysis Perspectives Journal, 3,* 1-6.

Kremer, H., Villamor, I., & Aguinis, H. (2023). *Leadership for Transformation in the Digital Era: A Meta-Integrative Review. The Leadership Quarterly, 34,* Article 101637.

Lane, P. J., Koka, B. R., & Pathak, S. (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of The Construct. *Academy of Management Review, 31,* 833-863. https://doi.org/10.5465/amr.2006.22527456

Leal-Rodríguez, A. L., Roldán, J. L., Ariza-Montes, J. A., & Leal-Millán, A. (2014). From Potential Absorptive Capacity to Innovation Outcomes in Project Teams: The Conditional Mediating Role of the Realized Absorptive Capacity in A Relational Learning Context. *International Journal of Project Management, 32,* 894-907. https://doi.org/10.1016/j.ijproman.2014.01.005

Lei, H., Tang, S., Zhao, Y., & Chen, S. (2024). Enterprise Digitalization, Employee Digital Literacy and R&D Cooperation: The Moderating Role of Organizational Inertia. *Chinese Management Studies, 18,* 479-505. https://doi.org/10.1108/CMS-10-2021-0456

Men, L. R., & Bowen, S. A. (2017). *Excellence in Internal Communication Management.* Business Expert Press.

Notteboom, T., Parola, F., & Rodrigue, J. P. (2024). Smart Port Performance: From Digital Metrics to Transformation Maturity. *Transportation Research Part A: Policy and Practice, 180,* Article 102656.

Rafiq, M., & Ahmed, P. K. (2000). Advances in the Internal Marketing Concept: Definition, Synthesis, and Extension. *Journal of Services Marketing, 14,* 449-462. https://doi.org/10.1108/08876040010347589

Ruel, H., Rowlands, H., & Njoku, E. (2021). Digital Business Strategizing: The Role of Leadership and Organizational Learning. *Competitiveness Review: An International Business Journal, 31,* 145-161. https://doi.org/10.1108/CR-11-2019-0109

Senbursa, N. (2023). Container Port Employees' Organizational Culture Perception, Job Satisfaction & Intention to Stay at Work. *Marine Science and Technology Bulletin, 12,* 12-26. https://doi.org/10.33714/masteb.1217277

Sharma, M., Paliwal, T., & Baniwal, P. (2024). Challenges in Digital Transformation and Automation for Industry 4.0. In D. Jose, P. Nanjundan, S. Paul, & S. N. Mohanty (Eds.), *AI-Driven IOT Systems for Industry 4.0* (pp. 143-163). CRC Press. https://doi.org/10.1201/9781003432319-9

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal, 18,* 509-533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Todorova, G., & Durisin, B. (2007). Absorptive Capacity: Valuing Reconceptualization. *Academy of Management Review, 32,* 774-786. https://doi.org/10.5465/amr.2007.25275513

UNCTAD (2023). *Review of Maritime Transport 2023.* United Nations Conference on Trade and Development. Https://Unctad.Org

World Bank (2023). *Port Reform and Digital Readiness: Southeast Asia Briefing.* World Bank Group. Https://Www.Worldbank.Org

Yang, Y. C., & Hsieh, Y. H. (2024). The Critical Success Factors of Smart Port Digitalization Development in The Post-COVID-19 Era. *Case Studies on Transport Policy, 17,* Article 101231. https://doi.org/10.1016/j.cstp.2024.101231

Yap, Y. W., Wong, W. L., & Fung, X. M. (2024). *Organizational Factors Affecting Employee Engagement in The Service Industry in Malaysia.* Doctoral Dissertation, University Tunku Abdul Rahman.

Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review, 27,* 185-203.

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths About Mediation Analysis. *Journal of Consumer Research, 37,* 197-206. https://doi.org/10.1086/651257

Zhu, Y., & Zhang, J. (2022). Leading in Complexity: How Transformational Leadership Builds Digital Resilience. *Management Decision, 60,* 2351-2373.