

BEYOND DIGITAL BANKING: THE STRATEGIC ROLE OF PHYSICAL ASSET MANAGEMENT CAPABILITY IN ENHANCING OPERATIONAL RESILIENCE AND FINANCIAL PERFORMANCE IN MALAYSIAN BANKS

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Abstract. Digital banking has intensified the strategic importance of technology-enabled service delivery, but the Malaysian banking sector remains dependent on physical and hybrid physical-digital assets, including branches, ATMs, cash infrastructure, data centres, facilities, backup sites, security systems, and building services. Bank Negara Malaysia's recent financial-stability reporting indicates that operational and cyber resilience remain supervisory priorities, with financial institutions investing heavily in IT infrastructure, data-centre upgrades, cybersecurity controls, and integrated business continuity testing (Bank Negara Malaysia, 2025). ISO 55000 and ISO 55001 frame asset management as a systematic approach for realizing value from assets by balancing performance, risk, cost, assurance, adaptability, and sustainability (International Organization for Standardization [ISO], 2024a, 2024b). This paper develops a Malaysia-focused conceptual argument that Physical Asset Management Capability (PAMC) is a strategic organizational capability that supports operational resilience and, indirectly, financial performance in banks. Drawing on the resource-based view, dynamic capabilities theory, operational resilience literature, facilities management, corporate real estate management, and Malaysian banking regulation, the paper proposes that PAMC enhances resilience through asset visibility, lifecycle planning, risk-based maintenance, redundancy, business continuity readiness, and performance monitoring (Barney, 1991; Duchek, 2020; Teece et al., 1997). The paper contributes a conceptual framework for examining PAMC in the Malaysian banking sector and proposes future empirical testing using bank-level operational, asset, and financial performance indicators.

Keywords: Bank Negara Malaysia; Dynamic Capabilities; ISO 55000; Malaysian Banking; Financial Performance; Operational Resilience; Physical Asset Management Capability; Resource-Based View

1. INTRODUCTION

The Malaysian banking sector is frequently discussed through the lens of digital banking, fintech, mobile applications, and cyber risk; however, the continuity of banking services continues to depend on physical and hybrid infrastructure. Bank branches, ATMs, cash deposit machines, call centres, data centres, recovery sites, mechanical and electrical systems, security equipment, and workplace facilities remain embedded in the delivery of critical banking services. Bank Negara Malaysia's *Financial Sector Blueprint 2022–2026* identifies digitalisation as a strategic thrust while also emphasizing financial stability, market dynamism, sustainable development, and the sector's role in supporting households and businesses (Bank Negara Malaysia, 2022a). This indicates that digital transformation should not be interpreted as a shift away from physical infrastructure, but as a transformation in how physical, technological, and human systems jointly sustain financial intermediation.

Recent evidence from Bank Negara Malaysia's *Financial Stability Review: Second Half 2024* reinforces this point. Malaysian banks remained well-capitalised, with a total capital ratio of 18.3%, a liquidity coverage ratio of 160.7%, and a net stable funding ratio of 116.3% as at end-2024, while banking-system return on assets and return on equity stood at 1.4% and 12.2%, respectively (Bank Negara Malaysia, 2025). At the same time, operational resilience remained a

key supervisory focus: reported operational-risk losses were small at 0.03% of total banking system capital, but cyber threats, DDoS attacks, service availability, third-party dependencies, and IT infrastructure complexity continued to require supervisory and institutional attention (Bank Negara Malaysia, 2025).

This paper argues that Physical Asset Management Capability (PAMC) deserves explicit scholarly attention in Malaysian banking because physical assets are not merely administrative overheads; they are operational resources that enable service continuity, customer access, regulatory compliance, and resilience. ISO 55000 defines asset management as a framework for managing assets over their lifecycle to realize value and support organizational objectives, while ISO 55001 specifies requirements for asset management systems that balance performance, risk, and expenditure (ISO, 2024a, 2024b). Asset management literature similarly shows that physical asset management practices can influence operational performance through strategy and planning, risk management, lifecycle delivery, asset information, and asset review (Maletić et al., 2020).

The purpose of this paper is therefore to revise and extend the existing conceptual article into a publication-ready Malaysia-focused paper on PAMC, operational resilience, and financial performance in banks. Specifically, the paper asks: How can physical asset management capability enhance operational resilience and financial performance in Malaysian banks? The answer developed here is conceptual rather than causal: PAMC is proposed as a strategic capability that enables banks to anticipate, absorb, recover from, and adapt after disruptions, thereby protecting service continuity and supporting financial outcomes such as cost efficiency, asset productivity, customer trust, and profitability (Duchek, 2020; Lengnick-Hall et al., 2011).

2. LITERATURE REVIEW

2.1 Malaysian banking, digitalisation, and operational resilience

Malaysia's financial sector is undergoing rapid digitalisation, yet the sector's regulatory agenda remains anchored in financial stability and operational continuity. The Financial Sector Blueprint 2022–2026 states that technological applications, shifts to digital channels, and new business models create opportunities for better financial services but also raise questions about how finance should be regulated (Bank Negara Malaysia, 2022a). Bank Negara Malaysia's 2023 Risk Management in Technology policy document strengthens expectations on governance, cybersecurity, cloud risk management, technology operations, third-party risk, and incident reporting, reflecting the growing dependence of financial institutions on technology infrastructure (Bank Negara Malaysia, 2023).

Operational resilience is broader than technology resilience because it concerns a bank's capacity to continue delivering critical operations through severe but plausible disruptions. The Basel Committee on Banking Supervision defines operational resilience as a bank's ability to withstand, adapt to, and recover from operational-risk-related events that may cause significant operational failures or disruption in financial markets (Basel Committee on Banking Supervision \[BCBS\], 2021a). The Basel principles cover governance, operational risk management, business continuity planning and testing, mapping of interconnections and interdependencies, third-party dependency management, incident management, and ICT including cybersecurity (BCBS, 2021a).

Bank Negara Malaysia's Business Continuity Management policy document similarly requires financial institutions to develop robust BCM frameworks, identify critical business functions, set business continuity objectives such as maximum tolerable downtime and recovery time objectives, and establish recovery strategies including crisis management plans, business continuity plans, disaster recovery plans, alternate sites, and recovery sites (Bank Negara Malaysia, 2022b). These requirements show that Malaysian banking resilience depends on the readiness of both digital and physical arrangements, including premises, infrastructure, systems, alternative sites, and essential service channels such as ATMs, online services, call centres, clearing, and settlement functions.

2.2 Physical asset management capability

PAMC in this paper refers to a bank's integrated capability to plan, acquire, operate, maintain, renew, monitor, and govern its physical and physical-digital assets so that they support service continuity, risk management, regulatory compliance, and strategic objectives. ISO 55000 describes asset management as a systematic approach that helps organizations optimize asset usage, improve financial performance, manage risk, and support sustainability (ISO, 2024a). ISO 55001 provides requirements for establishing, implementing, maintaining, and improving an asset management system, including policy, objectives, lifecycle control, decision-making, risk and opportunity management, and continual improvement (ISO, 2024b).

Prior research supports the view that asset management should be treated as a strategic capability rather than a narrow maintenance function. El-Akruti et al. (2013) argue that engineering asset management links asset-related planning and control activities to organizational strategy; inadequate asset management elements can negatively affect cost, productivity, quality, business outcomes, and strategy achievement. Schuman and Brent (2005) similarly emphasize lifecycle asset management, arguing that operational reliability and systems engineering help achieve optimum value from physical assets over a facility's lifetime.

Empirical evidence also supports the performance relevance of PAM. Maletič et al. (2020) validate PAM core practices as a second-order construct comprising strategy and planning, risk management, lifecycle delivery, asset information, and asset review; using survey data from 138 organizations, they find that PAM core practices have a significant direct effect on operational performance. Alsyouf et al. (2021) report that ISO 55000 implementation positively affects financial, customer, business process, and learning-and-growth perspectives among certified firms. Although these studies are not bank-specific or Malaysia-specific, they provide a defensible theoretical foundation for examining PAMC in banking.

2.3 Facilities, Corporate Real Estate, And Banking Performance

Bank facilities and corporate real estate also influence banking outcomes because they shape customer experience, workforce productivity, operating cost, accessibility, and risk exposure. Ikediashi (2024) finds in a banking-sector study that strategic, tactical, and operational facilities management roles influence service-quality indicators such as tangibles, reliability, responsiveness, assurance, and empathy. Donkor-Hyiaman et al. (2021) show that corporate real estate management can matter for bank profitability, while warning that underinvestment in maintenance and property management may reduce staff productivity and customer patronage.

Malaysia-specific banking service research reinforces the relationship between service quality, satisfaction, trust, and loyalty. Haron et al. (2020) find that dimensions of service quality in Malaysian Islamic banks are positively related to customer satisfaction and loyalty, and that trust partially mediates the satisfaction–loyalty relationship. Because banking service quality includes tangible and reliability dimensions, the condition, accessibility, security, and reliability of physical service environments may contribute indirectly to customer trust and retention, especially in a dual banking system where Islamic and conventional institutions compete for customer confidence.

2.4 Financial performance in Malaysian banks

Financial performance in banking is typically evaluated through profitability, efficiency, asset quality, capital adequacy, liquidity, and risk indicators. Ibrahim (2020), in a Malaysia-focused empirical banking study, uses measures such as net interest margin, return on assets, and non-performing loans to examine efficiency, profitability, and risk across Islamic and conventional banks. Bank Negara Malaysia's financial-stability indicators similarly report capital ratios, liquidity ratios, impaired loans, return on assets, return on equity, and cost-to-income ratio as key banking-system soundness measures (Bank Negara Malaysia, 2025).

Digital transformation may influence financial performance, but the evidence is not uniformly positive across all indicators. Rahmalia et al. (2024) examine Malaysian publicly listed banks before and after mobile-banking adoption and find significant differences in loan-to-deposit ratio and capital adequacy ratio, but no significant difference in ROE and non-performing loans. This suggests that digital-channel adoption alone may not automatically improve all financial-performance dimensions; complementary capabilities, including asset, technology, risk, and continuity capabilities, may be required to convert digitalisation into sustained performance.

3. RESEARCH METHODS

The resource-based view (RBV) explains why PAMC can be strategically relevant. Barney (1991) argues that firm resources include assets, capabilities, organizational processes, information, and knowledge that enable strategies improving efficiency and effectiveness; resources can generate sustained advantage when they are valuable, rare, imperfectly imitable, and non-substitutable. In banking, branch networks, data-centre resilience, security infrastructure, site location, maintenance knowledge, vendor relationships, asset information systems, and cross-functional asset governance may become valuable resources when they support uninterrupted delivery of critical services.

Dynamic capabilities theory strengthens this argument by emphasizing adaptation under change. Teece et al. (1997) define competitive advantage in dynamic environments as resting on organizational processes, asset positions, and evolutionary paths, particularly the ability to integrate, build, and reconfigure internal and external competences. PAMC can therefore be conceptualized as a dynamic capability when banks use asset data, lifecycle planning, risk analytics, and scenario testing to reconfigure physical and digital infrastructure in response to cyber threats, climate-related disruptions, changing customer behaviour, and regulatory expectations.

Organizational resilience literature provides the mediating logic between PAMC and performance. Ducheck (2020) conceptualizes resilience as a meta-capability consisting of anticipation, coping, and adaptation. Anticipation includes observing risks, identifying threats, and preparing; coping includes accepting disruptions and developing solutions; adaptation includes reflection, learning, and organizational change. PAMC contributes to these stages by enabling asset condition visibility, risk-based maintenance, redundancy planning, alternate-site readiness, recovery testing, post-incident learning, and asset-investment reprioritisation.

4. RESULTS AND DISCUSSION

This paper proposes that PAMC influences bank financial performance primarily through operational resilience rather than through a simple direct cost-saving mechanism. In this framework, PAMC consists of five interrelated dimensions: strategic asset planning, risk-based lifecycle management, asset information capability, business continuity and redundancy capability, and asset performance review. These dimensions align with ISO 55000/55001 principles and with Maletič et al.'s (2020) PAM core practices of strategy and planning, risk management, lifecycle delivery, asset information, and asset review.

Proposition 1: PAMC is positively associated with operational resilience in Malaysian banks. Banks with stronger asset planning, asset information, maintenance governance, alternate-site readiness, and lifecycle controls should be better positioned to preserve critical operations during disruptions (BCBS, 2021a; Bank Negara Malaysia, 2022b; ISO, 2024a)

Proposition 2: Operational resilience mediates the relationship between PAMC and financial performance. Resilient operations can reduce disruption-related losses, protect service availability, sustain customer trust, and support efficient recovery, which may contribute to profitability and stability indicators such as ROA, ROE, cost-to-income ratio, impaired-loan management, and capital adequacy (Bank Negara Malaysia, 2025; Ducheck, 2020).

Proposition 3: The relationship between PAMC and operational resilience is strengthened by technology-risk governance and BCM maturity. BNM's RMIT and BCM policy expectations require financial institutions to integrate technology risk management, incident reporting, business continuity planning, testing, recovery objectives, and alternate-site arrangements into institutional governance (Bank Negara Malaysia, 2022b, 2023).

Proposition 4: The relationship between PAMC and financial performance is strengthened when banks integrate physical asset data with digital transformation initiatives. Bank Negara Malaysia reports that rising IT expenditure is driven partly by major data-centre infrastructure upgrades to ensure operational resilience during peak periods, while Malaysian digital-banking research shows that mobile-banking adoption does not uniformly improve all financial indicators (Bank Negara Malaysia, 2025; Rahmalia et al., 2024).

The proposed framework reframes bank assets from "support infrastructure" to "strategic resilience resources." Malaysian banks operate in an environment of digital adoption, cyber threats, regulatory scrutiny, service availability expectations, and customer trust sensitivity. In this context, PAMC can support operational resilience by ensuring that physical and hybrid assets are visible, maintained, risk-assessed, tested, and aligned with critical business services. This is consistent with Basel's emphasis on operational resilience and BNM's expectations for business continuity, incident response, technology risk governance, and integrated BCP testing (BCBS, 2021a; Bank Negara Malaysia, 2022b, 2023, 2025).

For banking management, the key implication is that asset management should be integrated into enterprise risk management, technology governance, business continuity, and financial planning. Asset decisions should not be based only on acquisition cost; they should incorporate lifecycle cost, resilience contribution, service criticality, failure impact, recovery time, climate exposure, regulatory expectations, and customer access. This position is supported by Schuman and Brent's (2005) lifecycle asset management view and El-Akruti et al.'s (2013) evidence that inadequate asset-management planning and control can negatively affect cost, productivity, quality, and strategic outcomes.

For regulators and policymakers, the paper suggests that operational resilience assessments could be enriched by including physical-asset indicators alongside technology and cyber indicators. Relevant indicators may include critical-site mapping, asset criticality ratings, backup power adequacy, data-centre resilience, branch and ATM availability, maintenance backlog, recovery-site readiness, vendor dependency mapping, and post-incident asset learning. These indicators align with ISO 55001's structured asset management system requirements and with Basel's emphasis on mapping interconnections, dependencies, business continuity testing, and incident management (BCBS, 2021a; ISO, 2024b).

Future empirical research should test the framework using Malaysian bank-level data. A suitable research design could combine survey measures of PAMC with objective indicators such as ATM uptime, branch downtime, data-centre incidents, maintenance expenditure, recovery-test outcomes, IT infrastructure investment, operational-risk losses, cost-to-income ratio, ROA, ROE, liquidity ratios, impaired-loan ratios, and customer satisfaction. Because PAMC is multidimensional, future studies may model it as a higher-order construct, consistent with Maletič et al.'s (2020) validated second-order PAM model and contemporary PLS-SEM guidance (Hair et al., 2019).

Future research should also compare conventional banks, Islamic banks, investment banks, and digital banks in Malaysia. Ibrahim (2020) shows that banking performance may differ across Islamic and conventional banks, while Haron et al. (2020) highlights the importance of service quality and trust in Malaysian Islamic banking. These differences suggest that PAMC may operate differently across business models depending on customer access channels, branch intensity, Shariah governance needs, operational complexity, and reliance on outsourced infrastructure.

Finally, future studies should examine climate resilience and sustainability dimensions of PAMC. Bank Negara Malaysia has highlighted climate-related risks and sustainability reporting expectations, while ISO 55000/55001 emphasizes sustainability, adaptability, risk management, and lifecycle value. For Malaysian banks, this creates opportunities to investigate how flood exposure, energy efficiency, green buildings, backup-power resilience, and climate-related asset risk affect operational resilience and long-term financial performance (Bank Negara Malaysia, 2025; ISO, 2024a, 2024b).

CONCLUSION

This paper advances the argument that Malaysian banking resilience is not only a digital or cyber issue but also a physical asset management issue. PAMC can help banks align physical and hybrid infrastructure with critical services, regulatory expectations, risk appetite, customer trust, and financial performance. Drawing on RBV, dynamic capabilities, operational resilience, ISO 55000/55001, and Malaysian banking regulation, the paper proposes that PAMC enhances operational resilience through anticipation, coping, and adaptation mechanisms and may indirectly support financial performance by reducing disruption risk, improving service continuity, and strengthening asset-related decision-making (Barney, 1991; Duchek, 2020; ISO, 2024a; Teece et al., 1997).

The central contribution is a Malaysia-focused conceptual framework that positions PAMC as a strategic capability in banks. Rather than treating branches, ATMs, facilities, data centres, backup sites, and security infrastructure as residual costs, banks should treat them as resilience-enabling assets whose lifecycle governance can shape operational continuity and performance outcomes. This perspective is particularly important as Malaysian financial institutions continue to digitalise while still relying on physical and hybrid assets to provide accessible, secure, and reliable banking services (Bank Negara Malaysia, 2022a, 2025).

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