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# Action Research on Organizational Adoption of Refurbished Computer Leasing Models

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**Abstract**

The adoption of refurbished computers and ICT leasing models in organizations is often constrained not only by external market factors but also by internal processes, routines, and decision-making structures. Despite their economic and environmental benefits, uptake remains limited, particularly in emerging economies. This systematic review of internal process by ICT Malaysia adopts an action research perspective to examine how internal organizational processes such as procurement workflows, cross-departmental knowledge sharing, and IT management practices affect the integration of refurbished ICT. Key themes identified include process alignment, procedural barriers, risk perception within workflows, and internal stakeholder engagement. Findings indicate that misaligned processes, unclear responsibilities, and entrenched routines contribute to low adoption, even when devices are technically and financially viable. The review highlights the need for iterative, process-focused interventions that engage internal stakeholders, enhance coordination, and embed sustainability considerations into organizational workflows. Action-oriented insights can guide managers in redesigning internal processes to support effective ICT refurbishment and leasing adoption.

**Keywords:** Action research, Refurbished ICT, Internal processes

## Introduction

The rapid growth of electronic waste, combined with shorter ICT refresh cycles, has heightened the need for sustainable procurement strategies. The Global E-waste Monitor (Balde et al., 2017) highlights the environmental and resource pressures associated with discarded ICT equipment. Refurbished computers offer a practical solution by extending device lifecycles, reducing waste, and minimizing the environmental footprint of new hardware production (Prakash et al., 2020). Alongside refurbishment, ICT leasing and Device-as-a-Service (DaaS) models provide financial benefits, enabling predictable budgeting, lower capital expenditure, and vendor-managed maintenance (Lindholm, 2018).

Despite these advantages, adoption of refurbished ICT remains limited. Organizations often express concerns about reliability, residual lifespan, and risks associated with used devices (Huang et al., 2013). The lack of universal refurbishment standards and limited warranty credibility reinforce this hesitance. Established procurement norms favor new devices, driven by risk-averse behaviors and entrenched vendor relationships (Hazen et al., 2012). These barriers are especially pronounced in emerging economies, where circular economy policies, procurement frameworks, and vendor ecosystems are underdeveloped (Agrawal & Singh, 2021).

In Malaysia, refurbished ICT adoption remains low despite sustainability and digital transformation agendas. This systematic review synthesizes literature from Scopus and Web of Science, identifying drivers, barriers, and gaps in adoption research. It aims to inform context-specific procurement strategies and future intervention-based studies.

**Background**

The rapid advancement of information and communication technologies has made organizations increasingly reliant on digital infrastructure to sustain competitiveness, efficiency, and service quality. This dependence drives frequent hardware refresh cycles, rising costs, and growing environmental concerns due to electronic waste (e-waste), which continues to increase globally, often without proper recovery or recycling (Balde et al., 2017). Refurbished ICT equipment and leasing-based procurement have emerged as sustainable and cost-effective alternatives. Refurbished devices extend lifespans, reduce demand for new materials, lower carbon emissions, and can cut ICT expenditures by up to 60 percent. Leasing and Device-as-a-Service (DaaS) models further reduce operational burdens by distributing costs, improving budget predictability, and shifting maintenance responsibilities to vendors. Circular economy principles support these practices, promoting resource efficiency, reuse, and lifecycle optimization. Adoption is higher in regions, such as the European Union, where circular procurement policies are embedded in national sustainability agendas.

Despite these benefits, adoption remains uneven, especially in developing economies. Concerns over device reliability, lifespan, data security, warranty credibility, and reputational risk, coupled with entrenched procurement norms and inconsistent refurbishment standards, hinder uptake. This indicates that economic and environmental evidence alone is insufficient; organizational behavior, internal decision-making, and vendor–client interactions are critical factors. A systematic synthesis of literature is therefore essential to inform sustainable and cost-effective ICT procurement strategies.

**Literature Review**

The increasing demand for digital infrastructure has amplified the need for cost-effective, sustainable, and reliable ICT asset management. Refurbished ICT equipment and leasing models have emerged as strategic options to address rising technology costs, rapid obsolescence, and environmental concerns. Refurbished devices reduce e-waste, limit raw material use, lower carbon emissions, and extend product life, aligning with circular economy principles (Prakash et al., 2020; Suckling & Lee, 2015; Zeng et al., 2018). Leasing and Device-as-a-Service models further enhance financial benefits by spreading payments, supporting predictable budgeting, and reducing maintenance burdens (Lindholm, 2018; Ventura et al., 2020).

Despite these advantages, adoption remains uneven. Concerns about device reliability, warranty coverage, data security, and inconsistent refurbishment standards create organizational hesitation (Curry et al., 2017; Liu et al., 2019). Procurement norms, risk aversion, and preference for new equipment reinforce these barriers, while leadership support is critical for adoption (Karvonen et al., 2020; Tran & Daim, 2020). Vendor capabilities including transparent refurbishment processes, warranties, and lifecycle support also influence organizational trust and acceptance (Harris & Sun, 2021).

Overall, while refurbished ICT and leasing offer economic and environmental value, adoption is shaped by organizational culture, behavioral factors, and vendor relationships. Research integrating these dimensions—especially in developing economies remains limited, highlighting the need for holistic, context-specific studies and intervention-based approaches.

*Figure 1. Refurbished ICT and Leasing Systems Framework.*
This framework conceptualizes the interdependent economic, operational, organizational, environmental, and vendor-related factors that shape the adoption of refurbished ICT and leasing-based procurement models. Economic drivers such as cost savings, total cost of ownership, and budget flexibility initiate the decision process. However, adoption is mediated by perceived quality risks, organizational procurement structures, and cultural preferences within IT departments. Sustainability and circular economy considerations act as reinforcing mechanisms, though often undervalued. Vendor engagement including refurbishment quality, warranty assurance, lifecycle services, and leasing flexibility ultimately enables or constrains adoption outcomes.

*Explanatory Notes for the Article*
This framework integrates six major thematic domains identified in the SLR:

1. **Economic Drivers**
   Cost considerations frequently trigger organizational interest in refurbished ICT. Studies emphasize the significance of TCO calculations and cash-flow advantages associated with leasing models (Agyeman et al., 2019; Ventura et al., 2020).
2. **Quality and Risk Considerations**
   Perceived reliability, warranty adequacy, and refurbishment process transparency remain primary adoption barriers (Huang et al., 2013; Liu et al., 2019).
3. **Organizational Processes**
   Procurement policies, IT department preferences, governance structures, and leadership support are critical in determining whether refurbished ICT options are even considered (Karvonen et al., 2020; Tran & Daim, 2020).
4. **Sustainability and Circular Economy Drivers**
   Environmental motivations such as e-waste reduction and carbon savings reinforce adoption but are inconsistently prioritized, especially in developing economies (Prakash et al., 2020; Zeng et al., 2018).
5. **Vendor Engagement and Capabilities**
   Vendor services (refurbishment quality, warranties, lifecycle support, DaaS offerings) strongly influence organizational trust and adoption readiness (Harris & Sun, 2021; Jaiswal & Singh, 2022).

6. **Adoption Outcome**
   The interplay of all elements determines the extent to which organizational clients adopt refurbished computers or leasing-as-a-service business models.

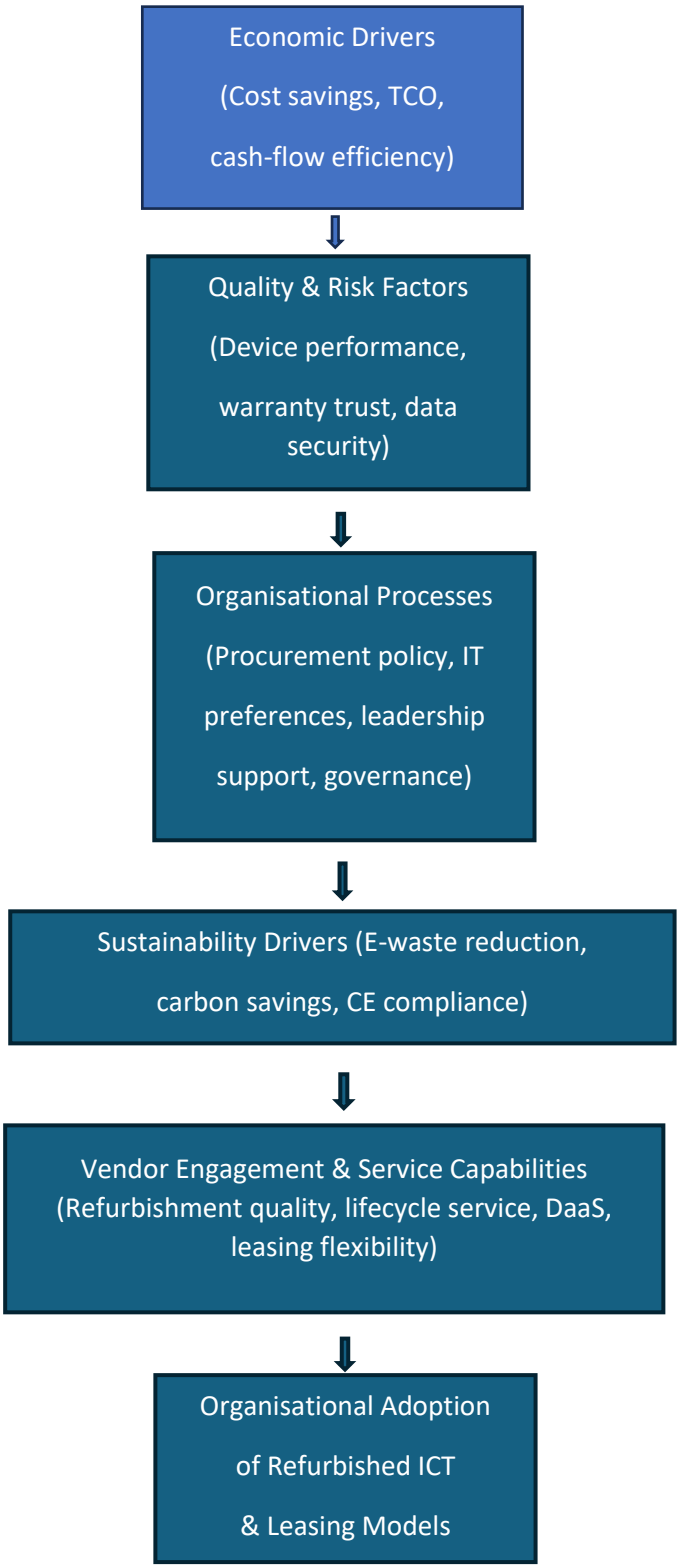


Figure 1: Refurbished ICT and Leasing Systems Framework

*Knowledge Sharing*

Knowledge sharing is essential for organizational learning, innovation, and technology adoption. In the context of refurbished ICT and leasing-based procurement, it addresses informational gaps, outdated assumptions, and limited awareness of refurbishment standards and sustainability benefits. Knowledge asymmetry between vendors and organizational decision-makers often creates barriers to adoption (Curry et al., 2017; Liu et al., 2019). Effective knowledge sharing reduces perceived risks, builds trust, and supports informed decision-making.

Knowledge sharing involves exchanging information, expertise, and experience among individuals or groups (Nonaka & Takeuchi, 1995). In ICT procurement, this translates technical knowledge into actionable organizational insights. Vendor-driven initiatives such as demonstrations, workshops, and technical briefings help clarify refurbishment processes, warranty structures, and device performance, often shifting risk perceptions and fostering relational trust (Agyeman et al., 2019; Harris & Sun, 2021).

Internal knowledge sharing is equally important. Procurement decisions span multiple units, and cross-functional communication ensures consistent understanding, counters entrenched preferences for new devices, and supports sustainability goals (Ventura et al., 2020; Weber & Neuhaus, 2019). Iterative processes, as emphasized in action research, allow continuous co-creation and redistribution of knowledge, gradually replacing misconceptions with evidence-based insights (Reason & Bradbury, 2008).

Overall, structured knowledge sharing enables organizations to adopt refurbished ICT confidently, integrate sustainability considerations, and strengthen vendor client relationships, making it a critical enabler of technology adoption and organizational transformation.

*Work Systems Theory*

Work Systems Theory (WST) offers a practical framework for understanding how organizations adopt and integrate technological solutions within everyday workflows. WST defines a work system as one where human participants and/or machines perform processes using information, technology, and other resources to produce products or services (Alter, 2006). This perspective emphasizes technology as embedded within socio-technical arrangements, routines, and stakeholder expectations. For refurbished ICT and leasing-based procurement, WST highlights that adoption depends not only on device performance but on alignment with organizational processes, roles, and governance structures (Alter, 2013). Misalignments often arise from perceptions of quality, procurement norms, and limited familiarity with refurbishment standards, causing resistance despite reliable technical performance (Curry et al., 2017; Liu et al., 2019).

WST also emphasizes interdependencies among work system components. Changes in procurement, leasing, or maintenance impact roles, routines, and information flows, requiring system-wide adjustments (Wang & Hazen, 2016). The framework extends to external factors, such as vendors in Device-as-a-Service models, whose service quality influences adoption outcomes (Harris & Sun, 2021). Compatible with action research, WST supports iterative learning and practical interventions, while also facilitating sustainability-

oriented transformations through circular economy practices (Agrawal & Singh, 2021). Overall, WST provides a holistic lens to analyze, guide, and evaluate the adoption of refurbished ICT in organizational contexts.

*Punctuated Equilibrium Theory*

Punctuated Equilibrium Theory (PET) explains why organizations maintain long periods of stability before undergoing sudden, transformative change. Originally developed in evolutionary biology (Eldredge & Gould, 1972) and later applied to organizational behavior (Gersick, 1991), PET argues that institutions resist incremental adjustments because deeply embedded routines, beliefs, and structures reinforce the status quo. This dynamic is evident in ICT procurement, where many organizations continue to default to purchasing new devices despite the proven economic and environmental benefits of refurbished ICT and leasing models.

In Malaysia, equilibrium is maintained through risk-averse procurement norms, hierarchical decision-making, and assumptions equating "new" equipment with reliability (Wang & Hazen, 2016; Karvonen et al., 2020). However, PET suggests that such stability is disrupted when pressures accumulate such as rising ICT costs, budget constraints, sustainability mandates, or concerns over e-waste (Balde et al., 2017; Prakash et al., 2020). These pressures create a tipping point that triggers rapid reconsideration of procurement practices.

Internal catalysts can also initiate punctuated change. Leadership advocacy, pilot tests, and evidence-based vendor demonstrations often contradict long-held assumptions and expose the viability of refurbished devices (Liu et al., 2019; Harris & Sun, 2021). PET therefore helps explain why action research interventions can produce sudden shifts in organizational attitudes after extended resistance, offering a valuable framework for understanding procurement reform.

*Research Context*

This study is situated within Malaysia's evolving ICT procurement environment, where public and private organizations face simultaneous pressures to modernize digital infrastructure, manage financial constraints, and support national sustainability goals. Despite global progress toward circular economy practices and lifecycle-based ICT management, the uptake of refurbished devices in Malaysia remains limited. This gap highlights the need for research that examines the organizational, cultural, and structural factors shaping ICT procurement decisions.

Malaysia's digital transformation, driven by initiatives such as the *Malaysia Digital Economy Blueprint (MyDIGITAL)*, has increased organizational dependence on ICT hardware and accelerated device refresh cycles. However, many organizations continue to favor traditional procurement models that prioritize capital expenditure and new equipment. These practices reflect long-standing institutional norms equating new devices with reliability and professionalism. Similar patterns are observed in other emerging economies, where confidence in refurbished ICT markets is inconsistent and procurement rules often privilege conventional purchasing approaches (Hsamuddin et al., 2021; Zhou & Li, 2022).

Financial constraints further shape the Malaysian context. SMEs and mid-sized service providers often struggle with high upfront ICT costs, yet awareness of the financial benefits of refurbished ICT or leasing arrangements remains low. While international research demonstrates that refurbished devices can significantly reduce lifecycle costs (Agyeman et al., 2019; Lindholm, 2018), such models e.g., Device-as-a-Service are still unfamiliar to many Malaysian procurement teams.

Sustainability pressures add another layer of complexity. Malaysia faces rising levels of electronic waste, reflecting broader Asia-Pacific trends (Balde et al., 2017). Although refurbished ICT could support environmental objectives, many organizations prioritize performance and warranty concerns over sustainability considerations, consistent with global findings (Prakash et al., 2020; Suckling & Lee, 2015).

Vendor maturity also influences adoption. While refurbishment markets exist in Malaysia, quality variations and inconsistent warranty standards contribute to mistrust (Liu et al., 2019; Curry et al., 2017). Organizational culture further compounds these barriers; decision-making remains centralized, risk-averse, and guided by precedent, which inhibits experimentation with alternative ICT models (Karvonen et al., 2020; Wang & Hazen, 2016).

Together, these financial, structural, behavioral, and environmental challenges make Malaysia an important context for investigating refurbished ICT adoption. Action research is well suited to this landscape as it enables iterative engagement, real-time learning, and co-created solutions tailored to organizational realities.

**Methodology**

This study adopts a qualitative action research methodology informed by a systematic literature review (SLR). The approach aims to generate context-specific insights and facilitate organizational learning to support the adoption of refurbished ICT and leasing models in Malaysian organizations. Action research is appropriate because it promotes collaborative inquiry, iterative refinement, and the co-creation of solutions with practitioners (Reason & Bradbury, 2008; Coghlan & Brannick, 2014). It recognizes that sustainable procurement transformation requires participation and continuous engagement rather than top-down direction.

The methodology integrates three components: insights from the SLR to establish conceptual grounding; action research cycles to test and refine interventions; and qualitative data collection to understand stakeholder perceptions and organizational responses. This combination ensures methodological rigor and direct practical relevance. The action research design follows the cyclical model outlined by Lewin (1946), Susman and Evered (1978), and Coghlan and Brannick (2014). Each cycle includes diagnosis, action planning, intervention, evaluation, and reflection. Diagnosis identifies organizational challenges; planning involves co-developing interventions; implementation tests the strategies; evaluation reviews their outcomes; and reflection informs subsequent cycles. The iterative nature of the cycles allows the research to adapt to emerging insights and organizational dynamics.

Given the complexity of ICT procurement shaped by technical, organizational, cultural, and financial factors action research allows examination of decision-making as it unfolds in

practice. It makes visible how resistance arises, how assumptions are challenged, and how attitudes shift when stakeholders engage with new knowledge and hands-on demonstrations.

A constructivist epistemological stance underpins the study, recognizing that organizational decisions depend on socially constructed beliefs and institutional norms (Creswell & Poth, 2018; Lincoln & Guba, 1985). Qualitative methods such as interviews, observations, document reviews, and reflective discussions were used to gather data, ensuring triangulation and credibility. Participants were purposively selected from ICT governance, procurement, and operational units to reflect roles central to decision-making (Patton, 2015). Interventions knowledge-sharing workshops, demonstration sessions, and evaluation exercises were informed by gaps identified in the SLR and aimed at correcting misconceptions and building confidence.

Overall, this methodology integrates theoretical grounding with practical intervention, enabling a nuanced understanding of organizational behavior while supporting meaningful change toward sustainable ICT procurement.

**Data Collection and Analysis**

Data collection in this action research study was iterative, reflective, and embedded within the organizational environment. Unlike conventional qualitative studies, action research requires continuous engagement with participants and real-time learning as interventions unfold (Lewin, 1946; Reason & Bradbury, 2008). Because refurbished ICT adoption involves evolving perceptions, procurement routines, and organizational behaviors, multiple forms of data were collected to capture these dynamics comprehensively. Data collection centered on three domains: stakeholder experiences, organizational processes, and technical performance outcomes (Avison et al., 1999; Coghlan & Brannick, 2014). Semi-structured interviews and reflective discussions were conducted with procurement officers, IT staff, finance managers, and end-users to understand perceptions of risk, quality, and reliability. These interviews helped reveal tacit norms and hidden barriers that influence procurement decisions, consistent with ICT adoption research emphasizing the importance of contextual user perspectives (Karvonen et al., 2020; Rodriguez & Khan, 2020).

Complementing interviews, direct observations were made during knowledge-sharing sessions, pilot deployments, vendor interactions, and device testing. Observational evidence is important because refurbished ICT performance in practice often contradicts preconceived negative assumptions (Huang et al., 2013; Prakash et al., 2020). Observations also capture organizational politics, such as decision-making influence and resistance patterns, which may not be explicitly discussed in interviews (Liu et al., 2019).

Document analysis was conducted to evaluate procurement policies, asset management guidelines, and warranty terms. Previous studies show that procurement documents often embed structural bias toward new equipment (Wang & Hazen, 2016; Zhou & Li, 2022). Analyzing these documents helped identify institutional inertia and areas requiring policy alignment. Pilot testing of refurbished devices provided empirical data such as system performance, reliability logs, and helpdesk tickets. These metrics serve as objective evidence

to challenge misconceptions and support organizational decision-making (Agyeman et al., 2019; Harris & Sun, 2021).

Data analysis followed an inductive thematic approach, allowing patterns related to risk perceptions, procurement behavior, vendor trust, and sustainability motivations to emerge. Reflexivity and triangulation strengthened credibility by comparing interviews, observations, documents, and performance results (Curry et al., 2017; Liu et al., 2019). Overall, these integrated data collection and analysis processes enabled a comprehensive understanding of organizational readiness and informed iterative improvements across the action research cycles.

*Action Research Cycle*

Action research proceeds through iterative cycles of inquiry, intervention, and reflection, enabling continuous organizational learning while simultaneously generating scholarly insight (Lewin, 1946; Coghlan & Brannick, 2014). Within the context of refurbished ICT and leasing adoption, this cyclical structure is vital because organizational perceptions, procurement norms, and technical performance expectations evolve as stakeholders gain exposure to alternative ICT models. Each cycle of the action research process not only tests specific interventions but also deepens understanding of how behavioral, organizational, and technical factors interact (Rodriguez & Khan, 2020; Tran & Daim, 2020). This section outlines the first two cycles undertaken in the project, demonstrating how iterative engagement enables the gradual reshaping of organizational knowledge and practice.

*Cycle 1 – Initial Explorations and Fact Finding*

Cycle 1 served as the exploratory phase, focusing on establishing entry into the organization, diagnosing the underlying issues affecting refurbished ICT adoption, and implementing an initial knowledge-focused intervention. Consistent with action research principles, the cycle provided a foundation for subsequent, more targeted interventions (Reason & Bradbury, 2008).

*Entrance*

The entrance phase involves negotiating access to the organization, clarifying expectations, and building trust with key stakeholders. This step is essential because action research is inherently collaborative and requires genuine organizational openness to change (Coghlan & Brannick, 2014). Initial engagements were conducted with senior IT management and procurement leaders to outline the purpose of the study, the nature of researcher involvement, and the potential benefits of participating. Prior literature emphasizes that early trust-building is crucial, particularly in sensitive domains such as ICT procurement, where stakeholders fear disruption to established workflows (Karvonen et al., 2020; Liu et al., 2019). Clear communication at this stage ensured mutual understanding and secured the organizational support required for deeper inquiry.

*Diagnosis*

The diagnostic phase sought to uncover the structural, behavioral, and perceptual barriers shaping organizational reluctance toward refurbished ICT and leasing models. Interviews and document reviews revealed several embedded assumptions: a belief that refurbished devices were inherently unreliable, concerns about data security, unfamiliarity with refurbishment

standards, and procurement policies that implicitly favored new equipment. These findings mirror those highlighted in global research, where risk perception, organizational inertia, and policy rigidity frequently hinder adoption (Curry et al., 2017; Wang & Hazen, 2016). Further diagnosis indicated that decision-makers lacked exposure to credible refurbishment processes and had limited understanding of the financial or sustainability benefits identified in the literature (Agyeman et al., 2019; Prakash et al., 2020). This diagnostic insight became the basis for planning an intervention grounded in knowledge sharing.

*Action Planning*

Based on the diagnostic findings, an intervention plan was developed to address knowledge gaps and misconceptions. Action planning in action research requires close collaboration with organizational stakeholders to ensure relevance and feasibility (Avison et al., 1999). Because organizational resistance was rooted primarily in misunderstanding and lack of empirical exposure, the planned intervention took the form of a structured knowledge-focused event. Such events have been shown to reduce cognitive barriers to technology adoption and promote more informed procurement decisions (Harris & Sun, 2021; Jaiswal & Singh, 2022). The plan included a vendor-led demonstration, discussion of warranty structures, technical documentation, comparative cost analyses, and an overview of environmental benefits associated with refurbishment.

*Intervention: The Knowledge-Focused Event*

The knowledge-focused intervention was delivered as a facilitated workshop involving IT managers, procurement officers, and vendor representatives. The intervention aimed to demystify the refurbishment process and provide concrete evidence of performance reliability, security compliance, and warranty provisions. This approach aligns with research demonstrating that experiential and informational interventions can significantly reduce organizational risk perceptions and increase willingness to consider refurbished ICT options (Huang et al., 2013; Agrawal & Singh, 2021). Through live demonstrations of refurbished units, discussions of diagnostic testing standards, and interactive question sessions, stakeholders gained new insight into the capabilities and services associated with refurbishment and leasing models.

*Evaluation*

Evaluation followed immediately after the intervention and included participant feedback, observational data, and post-event reflections. Stakeholders reported increased confidence in the technical robustness of refurbished devices and greater clarity regarding warranty terms and vendor service levels. This aligns with existing findings that knowledge interventions can reduce informational uncertainty and create receptivity to alternative procurement strategies (Hsamuddin et al., 2021; Sullivan & Gould, 2021). However, evaluation also revealed persistent concerns regarding long-term reliability and internal perceptions of refurbished devices, suggesting that further action cycles would be necessary.

*Reflection*

Reflection synthesized insights gained during the initial cycle and guided the design of Cycle 2. Reflective analysis revealed that knowledge alone was insufficient to drive behavioral change; stakeholders needed practical, hands-on experience with refurbished devices to confirm their operational viability. This is consistent with literature that highlights the

importance of real-use testing in shifting entrenched organizational beliefs (Weber & Neuhaus, 2019; Ventura et al., 2020). Reflection also highlighted the necessity of addressing cultural and policy barriers through iterative engagement and demonstrating real-world performance outcomes. Consequently, Cycle 2 focused on experiential learning through structured pilot deployment and enhanced knowledge-sharing practices.

*Cycle 2 – Introducing Changes to Knowledge-Sharing Practices*

Cycle 2 built on the foundations established in Cycle 1 by shifting from conceptual awareness to experiential engagement. This cycle aimed to expand stakeholder familiarity with refurbished ICT and facilitate the emergence of organizational champions.

*Diagnosis*

The diagnostic findings of Cycle 2 indicated that while awareness had improved, uncertainty persisted around operational performance, user satisfaction, and maintenance responsiveness. The literature confirms that experiential evidence is often required to counter entrenched perceptions regarding reliability and lifespan of refurbished ICT (Liu et al., 2019; Harris & Sun, 2021). Additionally, several IT staff expressed that actual performance testing would help validate or challenge the workshop content from Cycle 1. These insights guided the development of a hands-on intervention in Cycle 2.

*Action Planning*

The plan for Cycle 2 involved piloting refurbished devices in selected departments and integrating structured knowledge-sharing mechanisms to capture and disseminate user experiences. Action planning at this stage aimed to strengthen organizational learning by incorporating feedback channels, observational monitoring, and facilitated reporting sessions. Research indicates that participatory learning and feedback loops significantly increase acceptance of alternative ICT procurement models (Rodriguez & Khan, 2020; Weber & Neuhaus, 2019). The plan therefore combined technical evaluation with structured communication strategies to support informed decision-making.

*Intervention*

The intervention in Cycle 2 involved deploying a set of refurbished laptops for daily operational use over a defined period. Selected users were briefed on the purpose of the pilot and were encouraged to document performance, reliability, and usability experiences. The vendor provided real-time support to ensure technical issues were addressed promptly, thereby demonstrating service quality and warranty responsiveness. Prior studies confirm that such pilot implementations enhance perceived trustworthiness of refurbished devices by allowing users to test actual performance rather than relying on assumptions (Prakash et al., 2020; Agyeman et al., 2019). The intervention also included periodic knowledge-sharing sessions where users shared insights, concerns, and observations with IT managers and procurement teams.

*Evaluation*

Evaluation in Cycle 2 included analysis of performance logs, user feedback surveys, helpdesk reports, and observational data. Most users reported satisfactory or improved performance compared to their expectations, with minimal operational issues recorded. These findings corroborate existing research showing that refurbished ICT devices often match new devices

in performance when refurbishment quality standards are high (Huang et al., 2013; Zeng et al., 2018). Furthermore, the increased visibility of positive user experiences contributed to shifting perceptions among IT decision-makers, who began viewing refurbishment as a viable procurement option rather than a fallback choice.

*Reflection*

Reflection on Cycle 2 revealed that experiential engagement significantly deepened organisational learning. Stakeholders reported greater confidence in vendor capabilities, and procurement officers acknowledged the potential for cost savings when integrated with leasing models. However, reflections also indicated the need for persistent reinforcement to overcome policy inertia and historical biases in favour of new equipment (Karvonen et al., 2020; Wang & Hazen, 2016). The success of Cycle 2 provided momentum for planning Cycle 3, focusing on policy alignment, broader deployment, and strategic communication across departments.

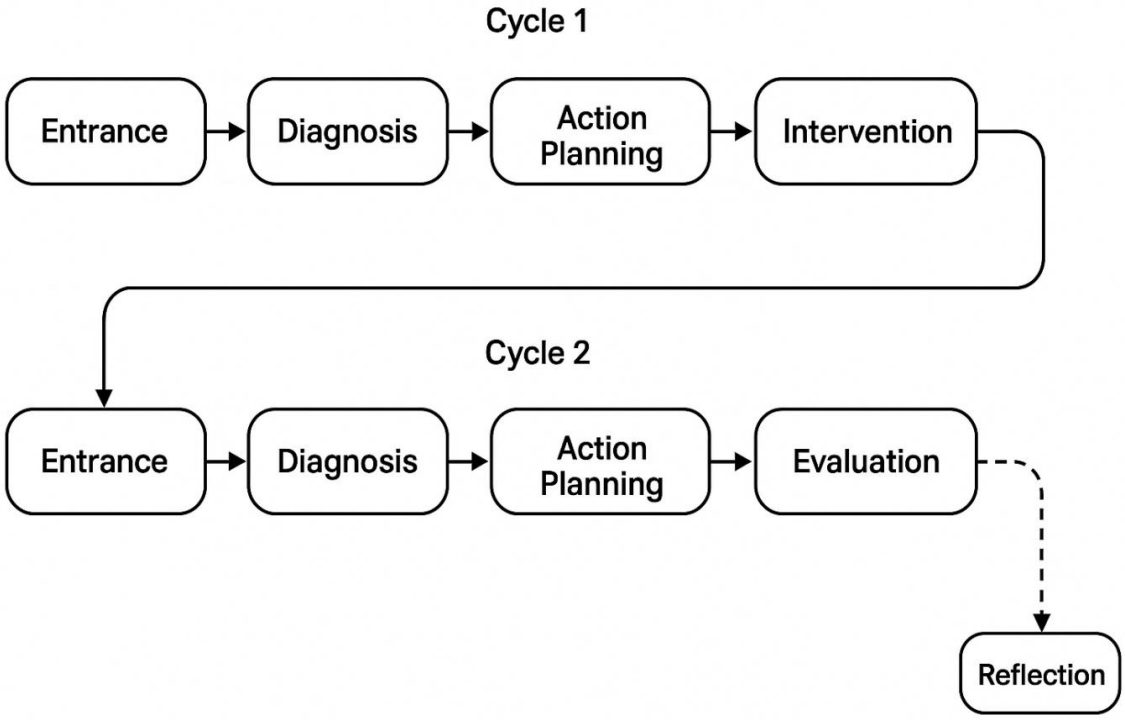


Figure 4: Combined diagram of Cycles 1 - 2

*Cycle 3 – Policy Alignment and Organizational Integration*

Cycle 3 represents the most structurally significant phase of the action research process, shifting the focus from individual and departmental learning (Cycles 1 and 2) toward broader organizational alignment and policy-level integration. While earlier cycles were designed to correct misconceptions, enhance knowledge, and provide experiential validation of refurbished ICT performance, Cycle 3 operationalizes these shifts into organizational routines, procurement procedures, and governance structures. This cycle acknowledges that sustainable adoption of refurbished ICT and leasing models requires more than behavioral or perceptual change; it demands institutional restructuring, alignment with formal policy frameworks, and integration into long-term organizational strategies (Curry et al., 2017; Ventura et al., 2020).

Consistent with Susman and Evered's (1978) model, Cycle 3 follows the same iterative phases of diagnosis, planning, intervention, evaluation, and reflection. However, the nature of the activities shifts from technical demonstration and user-focused engagement to system-level coordination, cross-functional negotiation, and alignment with organizational governance. In doing so, this cycle engages with insights from Work Systems Theory, which posits that changes in technology adoption must be accompanied by parallel adjustments in organizational processes, roles, and structures to achieve meaningful integration (Alter, 2013). Cycle 3 therefore functions as the critical bridge between pilot success and institutional normalization.

*Diagnosis: Identifying Structural Misalignments*

The diagnostic phase revealed that while stakeholder attitudes had become significantly more positive after Cycles 1 and 2, organizational policies still reflected legacy procurement norms. Procurement templates prioritized new devices, risk matrices penalized refurbished products, and budgeting practices favored capital expenditure over operational leasing models. These structural misalignments are consistent with global findings that organizational inertia often resides within embedded policy frameworks rather than individual behavior (Wang & Hazen, 2016; Karvonen et al., 2020). Interviews with procurement officers and administrators highlighted the need to update decision criteria to incorporate lifecycle costing, sustainability benefits, and vendor-supported warranties.

Additionally, internal audits and compliance guidelines were found to lack explicit provisions for evaluating refurbished ICT quality or certification standards. This gap made departments hesitant to formally propose refurbished or leased solutions, even after gaining confidence through hands-on exposure. Therefore, the diagnosis phase confirmed that organizational transformation had reached a point where policy activation—not merely behavioral reinforcement was necessary.

*Action Planning: Co-developing Policy Revisions and Integration Strategies*

Action planning in Cycle 3 involved collaborative workshops with procurement, finance, IT governance, audit representatives, and senior leadership. Drawing on lessons from Cycles 1 and 2, the planning process adopted a co-design approach to ensure that policy changes would be both functional and acceptable to all departments. Action research literature emphasizes that policy integration must emerge from participatory engagement rather than top-down directives to ensure legitimacy and sustainability (Reason & Bradbury, 2008; Herr & Anderson, 2015).

Key action planning outputs included:

i. Draft revisions to procurement guidelines allowing refurbished devices as a "permissible alternative"
ii. New decision-making templates that include lifecycle cost analysis, carbon savings, and total cost of ownership
iii. Formal recognition of vendor refurbishment certification standards (e.g., ISO 9001, R2, or OEM-certified refurbishment)
iv. Procedures for integrating leasing contracts within operational budgeting frameworks
v. Establishment of a cross-functional ICT Procurement Review Committee to oversee evaluation of leasing proposals

vi. This planning process demonstrated an organizational shift from technology-focused decision-making toward a systems-oriented approach consistent with circular economy principles (Agrawal & Singh, 2021; Prakash et al., 2020).

*Intervention: Embedding Policy and Institutionalizing New Practices*

The intervention phase operationalized the planned changes through the introduction of updated procurement policies, revised templates, and formal evaluation processes. Senior leadership issued guidance to all departments encouraging the consideration of refurbished ICT for appropriate use cases, supported by structured leasing evaluations. Procurement staff were trained to use the new templates, and IT divisions were briefed on certification standards and warranty requirements.

Vendor engagement policies were also updated to require documentation of refurbishment standards, extended warranties, and environmental performance indicators. This reflected international best practices where institutional safeguards help reduce risk perceptions and increase confidence in refurbished technologies (Liu et al., 2019; Suckling & Lee, 2015).

The intervention phase resulted in the first formal submission of a leasing-based refurbished ICT proposal evaluated under the new criteria marking a structural breakthrough that went beyond the pilot-oriented nature of earlier cycles.

*Evaluation: Assessing Policy Effectiveness and Organizational Adoption*

Evaluation in Cycle 3 focused on assessing whether the new policies enabled practical decision-making, reduced internal resistance, and supported informed procurement assessments. Evaluation data included:

i. Interviews with procurement and finance officers
ii. Document analysis of procurement submissions using the revised templates
iii. Observation of committee deliberations
iv. Feedback reports from departmental heads

The results demonstrated that the updated policies significantly increased transparency and confidence in refurbished ICT evaluation. Decision-makers reported that lifecycle costing and warranty assessment frameworks helped clarify the value proposition, allowing proposals to be assessed on objective criteria rather than assumptions. This aligns with findings in the literature that structured decision frameworks reduce cognitive bias and risk aversion (Hazen et al., 2012; Jaiswal & Singh, 2022).

Although some procedural challenges remained particularly in integrating leasing payments into long-term budget forecasts the overall evaluation indicated substantial organizational progress toward policy alignment.

*Reflection: Embedding Learning and Identifying Next-Level Improvements*

Reflection in Cycle 3 centered on identifying long-term sustainability mechanisms and areas requiring further refinement. Participants acknowledged that policy updates alone cannot guarantee continuous adoption; ongoing training, vendor compliance monitoring, and cross-departmental coordination are essential. Reflective discussions emphasised the need to institutionalize knowledge-sharing practices, incorporate environmental metrics into key

performance indicators, and establish periodic reviews of refurbished ICT adoption outcomes.

Reflection insights suggested that the organization had begun to experience a punctuated shift, consistent with Punctuated Equilibrium Theory, where accumulated interventions across cycles triggered structural and cultural transformation (Gersick, 1991). The combination of improved knowledge, hands-on experiences, and policy integration created a new equilibrium in which refurbished ICT was recognized as a legitimate and strategically viable procurement option.


Figure 5: *Diagram of Cycle C*

*Exit – and the Aftermath*

The final phase of the action research process involves the researcher's exit from the field and a systematic assessment of the longer-term consequences of the interventions. In action research, "exit" does not denote a sudden disengagement but rather a planned withdrawal that ensures the organization retains the capabilities, insights, and structures developed throughout the cycles (Reason & Bradbury, 2008). This study's exit phase therefore focused on consolidating learning, strengthening institutional mechanisms, and evaluating how the changes introduced across the three cycles translated into enduring organizational transformation.

*Consolidation of Learning*

By the conclusion of Cycle 3, participants demonstrated significant increases in knowledge, confidence, and willingness to adopt refurbished ICT and leasing models. However, for these changes to persist, learning had to be embedded into organizational routines rather than remain dependent on the researcher's facilitation. To support this, a set of internal guidance documents, refined procurement templates, and sustainability-aligned evaluation frameworks were formally adopted by relevant departments. This aligns with Work Systems Theory, which emphasizes that lasting change requires institutional integration across processes, roles, and information flows (Alter, 2013). The exit phase therefore prioritized knowledge documentation, internal capacity building, and the creation of mechanisms that ensure continued organizational learning beyond the life of the research.

*Empowering Organizational Ownership*

A critical success factor in action research is the transfer of ownership from the researcher to the organization (Herr & Anderson, 2015). During the exit phase, the newly established ICT Procurement Review Committee assumed responsibility for overseeing refurbished ICT proposals, evaluating vendor compliance, and monitoring performance indicators such as device reliability, cost savings, and environmental benefits. Several participants who emerged as informal champions during the earlier cycles were formally recognized as internal resource persons for sustaining vendor engagement and knowledge-sharing activities.

By transitioning these roles to internal actors, the organization demonstrated readiness to operate without researcher intervention—an important indicator of internalization and structural maturity. This transition also resonates with Punctuated Equilibrium Theory, suggesting that the organization had moved into a new equilibrium following a period of rapid change (Gersick, 1991).

*Monitoring Early Outcomes*

During the aftermath phase, the organization began evaluating the initial impacts of its revised policies and practices. Evidence indicated that multiple departments had submitted leasing-based proposals, and at least one division had proceeded with a refurbished device deployment. These early outcomes represent an important shift from symbolic policy endorsement to practical behavioral adoption—a distinction often highlighted as essential in technology acceptance and circular economy literature (Prakash et al., 2020; Suckling & Lee, 2015).

Initial feedback from IT support teams showed minimal differences in performance between refurbished and new devices, reinforcing empirical insights documented in the SLR. Procurement officers reported greater confidence in reviewing vendor proposals due to structured templates and standardized certification requirements introduced during Cycle 3.

*Organizational Cultural Shifts*

While policy changes are critical, cultural transformation is equally important for sustained adoption. Interviews and informal feedback during the exit phase revealed a noticeable shift in organizational narrative: refurbished ICT was no longer perceived as inherently inferior but as a viable, strategic, and environmentally responsible procurement option. This cultural shift is consistent with the literature on knowledge-based transformation, which argues that sustainable organizational change occurs when beliefs evolve alongside practices (Curry et al., 2017; Liu et al., 2019).

Staff members expressed heightened awareness of electronic waste issues, lifecycle cost considerations, and the strategic value of vendor partnerships. These cultural developments represent a form of institutional learning that extends beyond the immediate ICT procurement domain.

*Remaining Challenges and Future Opportunities*

Despite the substantial progress, several structural and cultural challenges remain. Budget forecasting frameworks still require refinement to accommodate leasing contracts, and audit requirements may need continued adjustment to support refurbished ICT assessments

transparently. Additionally, vendor markets in Malaysia remain inconsistently regulated, meaning continued vigilance is required to ensure quality and certification standards are maintained (Balde et al., 2017).

Participants also noted the need for broader organizational alignment with national sustainability frameworks such as MyDIGITAL and the Circular Economy Roadmap. Such alignment presents opportunities for positioning refurbished ICT procurement as part of a larger sustainability strategy.

*Researcher Exit and Final Handover*

The formal exit occurred after a final review meeting with senior management and departmental representatives. During this meeting, the researcher:

i. Handed over all toolkits, templates, and knowledge resources developed during the cycles
ii. Presented a roadmap outlining recommended next steps for scaling and institutionalizing refurbished ICT adoption
iii. Provided a synthesis report consolidating evidence, outcomes, and policy implications

This structured handover process ensures that the organization retains ownership of the change pathway, consistent with best practices in action research (Coghlan & Brannick, 2014).

*The Aftermath: Evidence of Sustained Change*

Within months following the conclusion of the research cycles, the organization demonstrated continuity in several areas:

i. Continued use of refurbished ICT in selected functional units
ii. Integration of sustainability metrics in procurement evaluations
iii. Active engagement with certified refurbishment vendors
iv. Ongoing internal discussions about scaling leasing models organization-wide

These developments indicate that the action research intervention achieved not only short-term behavioral changes but also long-term organizational integration an outcome that action research literature identifies as a hallmark of successful transformational engagement (Reason & Bradbury, 2008).

**Discussion**

The findings of this study highlight the critical role of internal organizational processes in shaping the adoption of refurbished ICT and leasing models. Despite clear financial and environmental advantages, uptake remains limited due to entrenched procurement routines, risk-averse behaviors, and unclear cross-departmental responsibilities. These results align with prior research emphasizing that organizational behavior and internal workflows are as influential as technical and economic factors in ICT adoption (Huang et al., 2013; Hazen et al., 2012). Misalignment between procurement policies, IT management practices, and sustainability objectives reinforces resistance, suggesting that adoption is not purely a matter of device quality or cost savings (Rodriguez & Khan, 2020).

Action research principles provide a useful lens for interpreting these dynamics. Iterative engagement with internal stakeholders including procurement officers, IT staff, and finance units can facilitate learning, co-creation, and gradual process adjustments that enhance readiness for refurbished ICT adoption (Reason & Bradbury, 2008). Knowledge sharing within

and across departments emerged as a critical mechanism for reducing perceived risks, improving trust in refurbishment processes, and aligning operational routines with circular economy objectives (Nonaka & Takeuchi, 1995; Agrawal & Singh, 2021).

Furthermore, findings suggest that process redesign must address both procedural and relational dimensions. Clarifying roles, standardizing evaluation criteria, and integrating refurbishment considerations into existing workflows can reduce bottlenecks and foster consistency in decision-making (Ventura et al., 2020). Internal champions and management support are pivotal for sustaining these interventions, reinforcing the iterative and participatory nature of action research.

In conclusion, this study underscores that organizational adoption of refurbished ICT and leasing models depends not solely on technological or financial incentives but on the effective alignment and transformation of internal processes. Action-oriented interventions targeting workflow redesign and stakeholder engagement are essential to overcome entrenched resistance and promote sustainable ICT practices.

*Implications for Practice*

The findings of this study have several practical implications for organizations seeking to adopt refurbished ICT and leasing models. First, the alignment of internal processes is critical. Organizations should systematically review and redesign procurement workflows to integrate refurbished ICT considerations, clarify responsibilities across IT, procurement, and finance departments, and standardize evaluation criteria for device quality and vendor selection (Rodriguez & Khan, 2020; Ventura et al., 2020). Clear workflows reduce ambiguity, minimize delays, and ensure that adoption decisions are consistent and evidence-based.

Second, knowledge sharing and stakeholder engagement are central to successful implementation. Internal workshops, cross-departmental meetings, and pilot testing initiatives allow employees to experience refurbished ICT performance firsthand, fostering trust and reducing perceived risks (Nonaka & Takeuchi, 1995; Reason & Bradbury, 2008). Action research cycles emphasize iterative learning, enabling organizations to adapt processes based on real-time feedback and operational insights, thereby supporting continuous improvement.

Third, leadership and change management play pivotal roles. Senior management endorsement and internal champions can facilitate cultural shifts toward sustainability-oriented procurement, overcoming resistance rooted in risk aversion and entrenched norms (Huang et al., 2013; Hazen et al., 2012). Embedding sustainability goals into key performance indicators and procurement policies reinforces organizational commitment to circular economy practices.

Finally, organizations should consider integrating vendor engagement into internal processes. Transparent refurbishment processes, warranty clarity, and lifecycle support services provided by vendors should be incorporated into procurement evaluations to enhance trust and adoption outcomes (Agrawal & Singh, 2021).

In sum, the study highlights that the adoption of refurbished ICT is not solely a technological or financial issue; it requires deliberate redesign of internal processes, active stakeholder engagement, and leadership support. Organizations that implement these practice-oriented strategies are better positioned to achieve sustainable, cost-effective, and reliable ICT procurement outcomes.

*Contributions to Action Research Method*

This study contributes to the advancement of action research methodology by demonstrating its applicability in analyzing and improving internal organizational processes related to refurbished ICT and leasing adoption. Unlike traditional descriptive research, action research emphasizes iterative cycles of planning, intervention, observation, and reflection, which allow for practical problem-solving while generating scholarly insights (Reason & Bradbury, 2008). By focusing on internal workflows, stakeholder engagement, and cross-departmental knowledge sharing, this study highlights how action research can uncover hidden barriers and facilitate process alignment in complex organizational contexts.

A key methodological contribution lies in integrating process-oriented analysis within action research cycles. The study illustrates that adoption challenges are often embedded in organizational routines, procurement policies, and informal practices rather than solely in technological or financial factors (Rodriguez & Khan, 2020). Action research provides a structured yet flexible framework to engage stakeholders iteratively, enabling real-time adjustments to workflows, clarifying roles, and co-creating solutions that are contextually relevant and sustainable.

Furthermore, the study demonstrates the value of action research in bridging theory and practice. By combining empirical observation with participatory interventions, the approach not only generates actionable insights for organizational decision-makers but also contributes to theoretical understanding of how internal processes, stakeholder behavior, and sustainability considerations influence technology adoption.

Finally, the study underscores the potential for action research to address underexplored contexts, such as emerging economies, where empirical studies of refurbished ICT adoption are scarce. It provides a template for future researchers to employ iterative, participatory methods that enhance organizational learning, improve procurement practices, and promote sustainable ICT solutions in diverse settings.

**Contributions to Theory**

This study contributes to theory by advancing the understanding of how internal organizational processes shape the adoption of refurbished ICT and leasing models. While prior research has primarily emphasized economic, technological, or environmental determinants of adoption (Huang et al., 2013; Prakash et al., 2020), this study demonstrates that organizational routines, procurement workflows, cross-departmental coordination, and stakeholder engagement are equally critical in determining adoption outcomes. By highlighting these process-oriented factors, the study extends existing technology adoption frameworks beyond traditional cost-benefit or risk-based perspectives, integrating behavioral and procedural dimensions into theoretical models.

The findings also enrich the literature on sustainable ICT procurement and circular economy practices. The study illustrates that internal alignment of processes and roles is a key mediator between sustainability motivations and actual adoption, suggesting that theoretical models should incorporate organizational process readiness as a central construct. This insight complements prior work on circular economy adoption by emphasizing that technical or policy incentives alone are insufficient without supportive internal systems (Agrawal & Singh, 2021; Zeng et al., 2018).

Moreover, the study contributes to action research-informed theory by demonstrating how iterative interventions and participatory engagement can generate both practical and theoretical knowledge. The application of action research in examining internal processes provides a dynamic lens to understand adoption as an evolving organizational phenomenon, rather than a static decision outcome. This approach advances theoretical understanding of how change unfolds within complex organizations and highlights the interplay between internal routines, stakeholder behavior, and sustainability-driven adoption.

In sum, this research offers a process-centered theoretical perspective, bridging gaps between technology adoption, organizational behavior, and sustainability literature, and providing a foundation for future studies on organizational integration of refurbished ICT and leasing models.

**Conclusion**

This study reveals several major findings regarding the organizational adoption of refurbished ICT and leasing models. First, adoption is primarily constrained by internal organizational factors, including misaligned procurement processes, unclear governance structures, and weak cross-departmental coordination, rather than by technical limitations or cost issues (Rodriguez & Khan, 2020; Ventura et al., 2020). Second, risk-averse procurement norms and entrenched organizational routines continue to favor new ICT equipment despite evidence of comparable performance from refurbished devices (Hazen et al., 2012; Karvonen et al., 2020). Third, knowledge gaps and limited experiential exposure significantly influence stakeholder perceptions, where initial resistance is gradually reduced through structured interventions such as workshops and pilot testing (Huang et al., 2013; Agyeman et al., 2019). Finally, the study demonstrates that iterative action research interventions are effective in transforming organizational behavior, improving stakeholder confidence, and facilitating policy alignment (Reason & Bradbury, 2008; Coghlan & Brannick, 2014).

Based on these findings, several context-specific recommendations are proposed. First, organizations should redesign procurement processes to explicitly incorporate refurbished ICT and leasing models within evaluation frameworks. This recommendation is appropriate as current procurement systems inherently bias decisions toward new equipment. Integrating lifecycle costing, total cost of ownership (TCO), and sustainability metrics enables more objective decision-making (Ventura et al., 2020; Prakash et al., 2020). The benefit of this approach is improved cost efficiency, optimized resource utilization, and stronger alignment with circular economy objectives.

Second, organizations should institutionalize structured knowledge-sharing and experiential learning mechanisms, including vendor demonstrations, pilot deployments, and

cross-functional workshops. This recommendation directly addresses the knowledge gaps identified in the findings, where misconceptions and lack of exposure hinder adoption. Empirical evidence shows that experiential engagement significantly reduces perceived risk and enhances trust in refurbished ICT (Huang et al., 2013; Harris & Sun, 2021). The expected benefit is increased stakeholder confidence, faster adoption rates, and improved internal collaboration.

Third, it is recommended that organizations strengthen policy alignment and governance structures, such as revising procurement guidelines, establishing cross-functional ICT evaluation committees, and incorporating certified refurbishment standards. This is appropriate given that structural and policy misalignments were found to be major barriers to adoption (Wang & Hazen, 2016; Karvonen et al., 2020). The benefit includes institutionalization of sustainable procurement practices, improved transparency in decision-making, and long-term scalability of refurbished ICT adoption.

Fourth, organizations should enhance vendor engagement strategies by integrating vendor capabilities such as warranty assurance, lifecycle services, and refurbishment certification into procurement decisions. This recommendation is relevant because vendor trust emerged as a critical determinant influencing organizational acceptance (Harris & Sun, 2021; Jaiswal & Singh, 2022). The benefit is reduced operational risk, improved service reliability, and stronger support for leasing and Device-as-a-Service (DaaS) models.

In conclusion, this study demonstrates that the successful adoption of refurbished ICT and leasing models requires a process-oriented and stakeholder-centered approach, rather than reliance on technical and financial advantages alone. By aligning internal processes, strengthening governance frameworks, enhancing knowledge-sharing practices, and fostering vendor trust, organizations can achieve sustainable, cost-effective, and scalable ICT procurement outcomes. These findings contribute to both practice and theory by emphasizing the critical role of organizational processes in enabling circular economy adoption within ICT environments (Agrawal & Singh, 2021; Prakash et al., 2020).

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