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STRATEGIC ROLE OF SMES IN THE UAE MOBILE INDUSTRY: AN INTRODUCTORY INSIGHT INTO INNOVATION AND GROWTH POTENTIAL

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Abstract:
The small and medium scale enterprises increasingly contribute, if conceivably, being a moving factor, to strategic innovations in economic diversification. This is even more proving pertinent for emerging economies, for instance, the United Arab Emirates (UAE). This research examines how small and medium enterprises resell and recycle mobile handsets, their innovative dynamics, and how this creates a competitive advantage, operational efficiencies, and broader international market expansion. Qualitative case study methodology (Yin, 2009) provides the backbone for research findings based on empirical data collected through semi-structured interviews with leaders of small and medium enterprises in the UAE mobile sector. This study shows that both innovation-incremental and radical-play significant roles in product development, refurbishment processes, and sustainable business practices within such SMEs; they do, however, face considerable difficulties in funding, knowledge sharing constraints, and the need for strategic turnaround mechanisms. A conceptual model has been developed to frame the nature of the interrelationship of innovation, growth, and market responsiveness in SMEs. It adds value to the existing literature by introducing an integrated theoretical perspective on innovation management (Porter, 1985; Abouzeedan, 2011) and providing policy recommendations in line with the UAE vision of achieving sustainable and technology-driven economic development. Recommendations to improve institutional support for SMEs, financing options targeting the mobile technology ecosystem, and capacity-building initiatives to enhance the innovation capability of SMEs are made in the paper.

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1. Introduction

1.1 Background of the Study

In an increasingly competitive global economy, innovation is widely recognised as a fundamental driver of corporate success, particularly for Small and Medium Enterprises (SMEs). As critical engines of employment, economic diversification, and technological progress, SMEs are uniquely positioned to respond to rapidly evolving market demands. The modern digital infrastructure combined with the liberal economic policies in the UAE would build a conducive environment for SMEs to contribute to national development objectives, including the UAE Centennial 2071. In this regard, the mobile resale-and-recycling industry is the least explored promising domain with a great potential for further sustainability and to shore up global competitiveness (Anand, 2020; Abouzeedan, 2011).

However, the extent of such SMEs' adoption and management of innovation, particularly in the environmentally oriented ventures of mobile recycling, has generally remained an under-researched area. It is this gap that the current study attempts to fill by probing the strategic role of innovation in UAE-deployed SMEs involved in mobile recycling and resale toward reaching emerging foreign markets.

1.2 Research Questions

The following research questions guided this study:

1) How does innovation enhance the strategic positioning of SMEs in the UAE engaged in the resale and recycling of used mobile phones in emerging international markets?
2) In what ways do innovations affect the product development and refurbishing of SMEs operating in the mobile recycling sector in the UAE?
3) How is innovation integrated into the strategic and operational activities of mobile phone recycling SMEs in the UAE?
4) In what ways does continuous innovation contribute to sustainability, competitiveness, and growth for these SMEs?
5) What is the impact of innovation on return on investment (ROI) for SMEs working on the mobile phone recycling and reselling business?

1.3 The Research Aim and Objectives

The research seeks to analyse the strategic role of innovation in enhancing competitiveness, operational efficiency, and international marketing for small and medium-sized enterprises involved in mobile recycling and reselling in the UAE. The

study elaborates on modelling innovation as a dynamic capability directed towards sustainable growth, product development, and value creation in the emerging world markets. The intuitive study has the following objectives intended to achieve this aim:

1) To critically review innovation in operational strategies and business models applied by SMEs in mobile phone recycling in the UAE.
2) To assess how innovation impacts product development, refurbishment, and responsiveness to markets in these enterprises.
3) To evaluate how innovation affects financial performance and return on investment (ROI) in SMEs operating in the mobile-phone-recycling industry.
4) To identify a conceptual framework that establishes the link between innovation and internationalization strategies of recycling-focused SMEs.
5) To examine how SMEs manage the innovation process and cope with challenges regarding knowledge sharing, resource constraints, and technology adaptation.
6) To enrich context-related recommendations to the existing innovation frameworks, reflecting the peculiarities of the UAE mobile technology ecosystem.

1.4 Research Methodology

This research uses a qualitative research design to ascertain the strategic role of innovation in SMEs operating in mobile phone recycling and reselling transaction domains in the United Arab Emirates. Since the inquiry is exploratory, and empirical work in this area is scarce, a case-study approach is sufficient. Such an approach allows deep consideration of complex organisational phenomena within their real-world context itself (Yin, 2009).

The research sites are those identified small and medium-sized enterprises (SMEs) that are actively involved in mobile phone recycling and resale. Data sources include semi-structured interviews with decision-makers in the company in key positions such as the founder, top management, and/or innovation leadership positions. This affords flexibility and depth by allowing the researcher to probe into sectors lived experiences, strategic choices, and innovation practices.

Purposive sampling was employed to ensure the credibility and reliability of findings to select SMEs based on size, market scope, and innovation engagement-related characteristics. This was then followed by transcription and thematic analysis of the data obtained so as to allow the recognition of patterns and categories that speak to innovation perception, implementation, and management in view of different companies' perspectives.

The study rests on an interpretivist paradigm that accepts the subjective and socially constructed nature of organisational realities (Alase, 2017; Husam Helmi Alharahsheh & Pius, 2020). The qualitative method is suitable both for building theories in an emerging field (Eisenhardt, 1989), and for serving the broader purpose of deriving some insights on SME innovation and strategic growth in emerging economies.

2. Literature Review

2.1 Innovation in SMEs: Theoretical Perspectives

Innovation is very commonly regarded as a linchpin of competitiveness and growth for SMEs. Very relevant theoretical perspectives, such as Schumpeter's innovation theory and the Resource-Based View (RBV), accentuate the importance of those dynamic capabilities that enable SMEs to adapt, innovate, and respond to unpredictable market environments (Schumpeter, 1934; Gao, 2019). SMEs tend to be much more agile than larger companies (Hambrick, 1984; Hashim, 2007); limited in financial and human resources, they are more capable of organisational flexibility and entrepreneurial orientation. Certainly, this internal dynamism becomes necessary for achieving incremental as well as radical innovation. On the contrary, it becomes a burden when there is a lack of systematic innovation strategy and formal R&D infrastructure or competent talent to facilitate sustainable and scalable innovation activities (Alghamdi, 2018; Porter, 1985).

Nevertheless, despite obvious limitations, the majority of SMEs develop innovations in products, processes, and services from immediate market access and customer intimacy. SMEs are known to play an important role in the national system of innovation, especially in emerging economies like the UAE, where the government actively encourages innovation as part of its Vision 2030 and beyond (Anand, 2020). Thus, innovation encompasses technological change but also refers to organizational change, digitalization, and environmentally sustainable strategies.

2.2 Digital Transformation and E-Commerce Integration

The adoption of digital technologies will transform SMEs into an innovation engine. Mobile-based platforms for e-commerce have changed how SMEs deal with their customers, organize supply chains, and penetrate new markets. According to Gill et al. (2017) and Glover (2010), such digital tools as customer relationship management software, mobile applications, and social media platforms have enabled SMEs to improve service delivery, boost brand visibility and create a customer feedback platform directly through them.

This is where the UAE shines with an extremely high mobile penetration, and thus digital transformation can be a strategic leverage for SMEs in the mobile phone recycling industry. These companies put refurbished phones on the market using the online platforms available to them and manage reverse logistics and international customer contacts. The main obstacles are very low levels of digital literacy, huge costs for implementing the digital technologies, and a lack of security infrastructure in cyber aspects (Auzzir, 2019). Even further, most SMEs need support from outside sources like training, technology acquisition, and policy incentives to make progress in leveraging digital transformation for innovation.

2.3 Knowledge Sharing and Organisational Learning

Innovation in SMEs is directly tied to knowledge creation, transfer, and application. Knowledge sharing allows firms to enable the internalization of ideas, update their processes, and be able to innovate. However, SMEs very often lack organizational structure and culture to support systematic knowledge management (Mohagheghi-Fard, 2019; Turner, 2023). Informally shared knowledge may be common, yet insufficient in keeping innovation alive in the long term.

For fruitful knowledge sharing, one needs a technology platform but also an organizational culture that will support learning and collaboration. As the UAE strives to be a knowledge economy, it can encourage SME innovation by promoting inter-organizational learning networks and public-private innovation partnerships. Thus, all government schemes aimed at SME development should aim at strengthening the knowledge ecosystem through training, innovation hubs, and access to research institutions.

2.4 Human Capital and Innovation Capability

The formation of human capital empowers innovation to a great extent within SMEs. Employee skills, experience, and creativity factor greatly into a firm's capacity to generate and act on ideas creatively and innovatively (Alghamdi, 2018; Porter, 1985). On the other hand, SMEs are limited by various factors in attracting and maintaining skilled personnel due to those advantages larger organizations have in terms of financial resources.

Investment in continuous learning, workforce development, and valuing an organizational culture is what would enhance innovation capability. With pro-innovation labour markets, SMEs are more likely to innovate on their products, venture into new markets, and respond to ever-changing customer needs. In the UAE, initiatives such as the National Innovation Strategy and Emiratisation policies create forums for SMEs to upgrade their human capital through training programmes and talent support schemes. Much more needs to be done to find a common ground between the output of schools and SME skill needs, particularly in technology and digital skills.

2.5 Internationalization and Strategic growth

Internationalization opens up opportunities to SMEs, enlarging the markets they will have access to, diversifying revenues, and exposing them to world best practices. However, like all such effects, there will always be a substantial innovation element involved: firms have to furnish their products, services, and facilities to the requirements of the various world markets before entering the market with their offerings (Qashou, 2018; Ransbotham, 2019). In this way, they can develop an innovative state of spirit that will allow them to break the cultural, regulatory or logistical barriers.

Emerging markets of Africa and South Asia can prove promising for mobile phone recycling SMEs in the UAE for expanding their operations. This could be combined with strategic alliances, franchising, as well as digital export channels to strengthen internationalization. Yet, this continues to cost many SMEs in lacking strategic thinking

and institutional drivers of internationalization-comprising the policies designed to optimize export preparedness, innovation funding, and international collaboration into a globally competitive SME ecosystem.

2.6 Environmental and Eco-Innovation

Eco-innovation refers to innovations that improve environmental performance. It seems to be emerging as a business strategy and a social necessity within the microcosm of mobile phone recycling, with both improving environmental performance and resulting in cost savings, compliance with regulations, and brand differentiation (Wahga, 2017; Radcliffe, 2018).

Increasingly, SMEs are acquiring circular economy principles, such as refurbishment, remanufacturing, and responsible extended disposal of e-waste, for instance, to contribute to the UAE sustainability agenda and to position SMEs as prima facie forerunners in green innovation. Nevertheless, several barriers, particularly financial and technical, prohibit eco-innovation adoption. There is a need for government initiatives in the form of incentives, environmental regulations, and awareness campaigns in order to fast-track SME participation in sustainable innovation.

3. Research Methodology

3.1 Research Design

This study is based on the exploration of qualitative research, which is more appropriate for the explanation of complex phenomena occurring in the real-world context. Since empirical literature relating to SME innovation in the UAE mobile phone recycling industry is still scant, a qualitative research design allows for a full exploration of the participants' lived experiences, organizational practices, and contextual influences. The study follows an interpretivist paradigm that assumes knowledge is socially constructed and contextually bound (Alase, 2017; Husam Helmi Alharahsheh & Pius, 2020).

3.2 Research Methodology: Case Study Approach

The approach is utilizing a multi-case study strategy that will generate rich, holistic data across selected SMEs found within their mobile phone recycling and selling industries in the UAE. The case study method offers an in-depth understanding of innovation processes, strategic decisions, and challenges the SMEs face (Yin, 2009). It bases this method on the ability to bring contextualized knowledge that is not accessible to large-sample quantitative techniques.

3.3 Data Collection Method

The collection of primary data shall be conducted by semi-structured interviews, enabling the researcher to probe themes in great depth while ensuring some flexibility and uniformity across cases. The interviews may be conducted in person or via video

conferencing, depending on the environment and participant preference. Each interview will take approximately 45-60 minutes and will be recorded upon receipt of consent.

A semi-structured interview guide covering themes including:

1) Variables affecting innovation,
2) Their types: product, process, business model,
3) The human capital, digital tools, and environmental practices,
4) Strategic approaches to internationalisation,
5) Financial and institutional support,

In addition, secondary data, including organizational reports, marketing materials, and policy documents, will be reviewed for triangulating the findings and adding contextual depth.

3.5 Data Analysis

Thematic analysis will be conducted to identify, analyse, and report patterns in the qualitative data. The interviews were transcribed and then opened to analysis using NVivo software in order to increase rigorous organization and retrieval of data. Themes would emerge from a purely inductive approach, informed by the research questions and relevant literature (Eisenhardt, 1989). The data, then, will constantly be compared in and across cases for the identification of similarities and differences as well as emergent frameworks.

3.6 Trustworthiness and Rigor

In the quest to strengthen and enhance the claims of the study for trustworthiness and credibility, the following strategies will be applied:

- **Triangulation:** Collection of data from multiple sources (interviews, documents, and literature),
- **Member checking:** Interview analysis summary validation with participants,
- **Audit trail:** The documenting of method decisions and procedures for analysis,
- **Reflexivity:** Acceptance of the researcher's position within potentially biased parameters.

These are all done to keep the research in determining valid and reliable qualitative research and transparency (Johnston, 2014).

3.7 Ethical Considerations

The qualitative research complies with standard ethics rules; it has a strong commitment to participant dignity, confidentiality, and a concept of informed consent throughout the research process. The participants were fully enlightened regarding the purpose and intent of the study, and informed consent in writing was obtained before data collection. It was completely voluntary, and persons were even allowed to withdraw their participation in the study at any given time without mention of a reason or consequence. In presenting the findings, all identifying information has been removed, or pseudonymised, and has maintained anonymity. All audiotapes, interview transcripts,

and other related materials will be kept in secure, encrypted digital storage, which is accessible only to the primary researcher. The procedures for handling data are in compliance with international standards of ethical research and the protection of privacy, including the General Data Protection Regulation, where applicable.

It is clear that the research design reflects a respectful, non-exploitative engagement with the participants. No person was psychologically harmed or socially imposed. Ethical reflexivity was maintained throughout the execution of the research to minimize potential biases and uphold integrity in reporting and interpretation.

4. Findings

4.1 Drivers of Innovation in Mobile Recycling SMEs

The SMEs of the UAE operate in an environment of great dynamism characterized by short product life cycles, fierce competition in the market, and a growing concern for the environment. Interviewees unanimously outlined three major external drivers of innovations:

a) **Market Competition:** Due to the open structure of the economy and the rigorous tech ecosystem in the UAE, SMEs are constantly pressured to change their products and services to remain aligned with local and global competitors. This situation thereby reinforces the premise stated by Scupola (2009) that innovation provides SMEs the ability to respond to external market volatility through innovative processes and methods of customer engagement.

b) **Affordability for Consumers:** With a huge expatriate population and an increased awareness towards cost, affordability will continue to remain an important purchasing factor. Thus, these companies are encouraged to innovate along the affordability-value continuum by using smart refurbishing and software upgrades that allow them to provide a near-new experience but at reduced prices (Gill, 2017; Gefen, 1997).

c) **Government Support for Innovation:** There is ample evidence that the government of the United Arab Emirates has actively promoted innovation as a priority by Vision 2031 and other industry-specific initiatives like the National Innovation Strategy towards achieving innovation. Various respondents alluded to innovation grants, hubs, and e-waste recycling mandates as being crucial enablers of their strategic pivots.

As for the internal drivers, the following were considered the most decisive:

a) **Entrepreneurial Orientation:** The founders have also demonstrated proactivity, boldness in taking risks, and a firm commitment to experimenting. These results corroborate the entrepreneurial qualities identified by Hashim (2007) and Hambrick (1984), whereby SMEs are much more willing to embrace change as compared to larger, structured companies.

b) **Leadership Vision:** Visionary leaders who embraced sustainability and digital transformation have played a key role in steering innovations. Their strategic and

operational role as change catalysts once more underscores Porter (1985) in citing leadership as a significant lever for innovation.

c) **Employee Creativity and Autonomy**: Many SMEs relied on informal innovation processes with technicians and customer service staff proposing low-cost yet effective solutions. This nimble, bottom-up innovation generation aligns with what Alghamdi (2018) described as a "learning-by-doing" culture.

"Whatever luxury has ever driven innovation is but a masking veil ahead of sharpened knives that rear their skin to survive. Without adaptation, you might just as well erase your name within six months." (SME Founder)

These findings suggest that innovations in these SMEs are led primarily by opportunities driven around the building of market pull and visionary push, rather than by a mere tactic of reactivity or survival.

4.2 Product Development and Refurbishment Innovation

All six SMEs have shown commitment to innovation in products and processes along with the refurbishment lifecycle. Their practice extends beyond basic repairs to include:

a) **Advanced Diagnostics and Modular Repair:** Companies install advanced diagnostics to measure the health of used phones and to repair and/or upgrade with precision. Modular designs permit the easier swapping of batteries, displays, and motherboards.

b) **Resale Refurbishment:** The interviewees outlined a systematic refurbishing approach: cleaning, reassembly, software resetting, and quality assurance testing; this approach allows phones to perform as new. This corroborates Hadidan's (2020) study which argued that service innovation in SMEs is strongly tied to value creation for the end-user.

c) **Innovations that Consider the Customer/Their Needs:** Some SMEs started to use recycled packaging and offered extended warranties as a differentiating feature. Some others used recyclable or biodegradable packaging to satisfy the needs of environmentally conscious customers (Radcliffe, 2018).

"We go beyond cosmetic fixes. Innovation is in how we reconstruct the lifecycle of a phone." (Operations Manager)

Supporting these strategies is the argument held by Gao (2019) that innovation processes are also able to improve the performance of a firm and customer satisfaction in resource-constrained instances.

4.3 Digital Transformation as Innovations Enabler

Digital transformation indeed emerged as a fundamental enabler for strategic growth. All the SMEs that were studied either adopted or were in the process of adopting the following technologies:

a) **E-commerce and Inventory Systems through Custom-built Platforms:** Enabled scaling up operations with real-time inventory tracking, automatic invoicing, and international shipping calculators.
b) **Mobile Integration:** Understanding a customer base that is smartphone-savvy-prioritized mobile user experiences, and integrating online payment options integration with such applications as WhatsApp, PayPal and local gateways.
c) **Social Media Engagement:** Instagram, TikTok, and Facebook for product promotions, testimonials gathering, and customer support. This informal but very robust marketing strategy confirms findings by Altarkait (2019) about the strategic use of social media in SME brand-building.

"Our automated sales platform, linked with global systems, has doubled our international orders." (Digital Strategy Lead)

But while there indeed were findings pertaining to the factors that hindered digital scalability, such as cyber threats, digital literacy gaps, and lack of in-house tech expertise, these have been discussed by Turner (2023).

4.4 Eco-Innovation and Sustainability Practices

In fact, eco-innovation in UAE-based mobile recycling SMEs has transformed over time from being rather peripheral as part of their strategic planning to a core value of the organization. Firms no longer see sustainability as compliance but as a way of differentiating their brand and their operations. Interviews revealed that eco-innovation was not just a strategy for compliance with regulations, but rather of an internalized culture as a long-term value proposition, aligned with both consumer expectations and the sustainable development agenda of the UAE government (Radcliffe, 2018; GSMA, 2018).

Primary practices identified in this regard include:

a) **Safe Disposal of E-Waste:** Most SMEs signed contracts with Dubai Municipality or duly registered WEEE (Waste Electrical and Electronic Equipment) processors to take toxic waste such as lithium-ion batteries, PCBs (Printed Circuit Boards), and non-recyclable plastics. Because of proper disposal, firms reduced their environmental footprints and also matched the national policy for waste management.
b) **Green Infrastructure Initiatives:** The investment in green infrastructure has been witnessed by many SMEs. Examples of this include facilities that have installed solar panels for warehouse power, LED lighting systems, and rainwater collection facilities for industrial cleaning. Further, recyclable packaging is now more

common than not, with materials like biodegradable or compostable, which contribute less to landfill.

c) **Eco-Certification and Sustainability Standards:** Two SMEs cited in the study are currently obtaining ISO 14001 environmental certification. While they noted the prohibitive cost as well as the burden of administration, they also saw certification as an important factor in international credibility and competitive edge. This agrees with Dakup (2018), which stated that eco-certifications are becoming critical for SMEs wishing to penetrate environmentally conscious markets, mainly Europe and parts of Asia.
To quote one sustainability officer:

"Sustainability is not optional-this is the future of our brand."

Consumer behaviour is shaping eco-innovation. Younger, digitally aware consumers seem to have a growing preference for environmentally responsible companies. This could put additional pressure on SMEs because they will need to be clear about their supply chains and disposal practices. Several firms still cite among their challenges in implementing sustainability measures the inconsistency of the regulatory environment and the lack of coordinated support among certifying bodies.

4.5 Human Capital and Innovation

Human capital was considered by far the most valuable asset in driving innovation in all six SMEs. To reiterate, innovation requires a technical skill, which includes the mobile repair and refurbishment sector, and it does not only call for formal education but for practical skill, creative thinking, and innovativeness-more often than not, it is learned through experience rather than academic training (Porter, 1985; Alghamdi, 2018).
Some of the notable findings are:

a) **Peer Learning and Knowledge Transfer**: Several firms instituted informal mentorship schemes where senior technicians mentor junior staff into faster skill acquisition and internal innovation. These ecosystems of knowledge exchange are less expensive but highly efficient, especially at the SME level, where formal training budgets may be limited.
b) **Innovation in Resourcefulness:** Instead of high-cost R&D programs, one company set up an in-house monthly innovation program, the "repair hackathons," during which employees can pitch proposals on innovations for achieving savings or efficiencies. Fast-tracking of those ideas implemented rewards the worker publicly. This intrapreneurship culture supports the entrepreneurial innovation models set out by Porter (1985) and further validated by empirical observations in your thesis.
c) **Skill Shortages and Retention Challenges:** Human capital is a key asset, but its retention is difficult. SMEs usually lose top talent to tech giants with better salaries and advancement opportunities. Also, a minimal career ladder in a small firm will

lure even the most loyal worker to seek greener pastures. This becomes critical especially to those companies' dependent on a small pool of exceptionally skilled repair engineers or software technicians (Alghamdi, 2018).

As one SME director explained:

"We need people who can solve problems with what they have, not MBAs."

The findings emphasize the need to create structures for non-cash incentives for skill development programs, flexible roles, and recognition mechanisms to promote loyalty and longevity in the company.

4.6 Scaling and Internationalisation Challenges

For many mobile recycling SMEs, scaling across borders is simply another nightmare despite the digital and operational flexibility. Although they can become somewhat visible and have limited export functions through digital platforms, institutional and logistical barriers are still put in the way of international growth.

Some important issues include:

a) **Tariff Barriers and Customs Delays:** A good number of firms cite experiences with high import tariffs, misclassification of goods, and longer times for customs to process, especially for markets in Africa and Southeast Asia. Such delays could lead to hardly forecastable delivery timelines while at the same time eroding profit margins, even in the face of strong product demand abroad.

b) **Regulatory Fragmentation:** Many refurbished products differ in terms of standards, laws of labelling, as well as environmental regulations across different markets, making them difficult to comply with and resource-intensive. One firm backed off the whole idea of entering India after it saw excessive red tape and uncertainty about how long it would take for refurbished imports to get approved.

c) **Risks of Intellectual Property (IP) and Brand Dilution:** SMEs also pointed to brand imitation in unregulated markets as a concern. Without any IP protections or trademarks in such regions, small players could easily lose the brand equity built with pain.

d) **Lack of Institutional Support**: Most of them agreed that the strategic advisory services, export financing, and legal consultancy concerning international IP protection and internationalization were simply absent for small and medium enterprises. This is also aligned with Ransbotham (2019) and Qashou (2018) who mentioned the need for government-backed programs for the benefit of all those small businesses interested in international endeavour.

As one export manager stated:

"Customs delays and poor logistics coordination often wipe out our margins, even when demand is high."

The SMEs also showed an interest in franchising, partnerships, and joint ventures, but the lack of coordinated institutional support and incentives for internationalisation remains a critical gap in the UAE's SME ecosystem.

5. Discussion

This research clearly supports the fundamental theoretical foundation on SME innovation, particularly as pertaining to the Resource-Based View (RBV) and Schumpeterian theory of innovation. From both perspectives, firms are understood to achieve and sustain a competitive edge when they manage to derive and deploy valuable, rare, inimitable, and non-substitutable (VRIN) resources such as technological capability, organizational culture, and human capital (Barney, 1991; Schumpeter, 1934).

What the study has found concerning UAE mobile phone recycling SMEs is that innovation is not just a reactive mechanism of survival but rather a strategic capability. In contrast, these SMEs are heterogeneous with regard to translating internal and external resources towards digital transformation, eco-innovation, and product development. The internal SMEs, therefore, are agile and future-oriented, those that embed innovation in their daily operations, leadership style, and employee engagement strategies.

5.1 Digital Innovation as Strategic Enabler

Digital innovation exudes characteristics of being a significant strategic enabler for market expansion and operational efficiency. SMEs have been incorporating such platforms as e-commerce, automated stock control systems, and digital marketing tools almost exclusively to reach untapped consumer segments in addition to widening operational efficiencies in reverse logistics and tracking the life cycles of refurbished products.

This is consistent with Gill et al. (2017) and Glover (2010), who claim that digital transformation leads to enhanced agility for SMEs and enables them to navigate volatile markets with minimum physical infrastructure. However, the study also cites ongoing challenges to reaching digital maturity: limited internal digital literacy, cybersecurity risks, and high implementation costs. Quite like Auzzir's (2019) observations, which argue that micro-SMEs are small firms, digitization remains quite a challenge in terms of capital and expertise.

Despite the advanced ICT infrastructure and such support initiatives as Smart Dubai 2021, only the more established SMEs among the sample put to full use these benefits. This implies that the policy effectiveness is moderated by absorptive capacity at the firm level, particularly in the context of technology adoption and development of human capital.

5.2 Human Capital and Informal Knowledge Systems

This research further emphasizes the important role of human capital in enhancing innovation. Employees, mostly technicians or frontline workers, are recognized as

sources of incremental innovations often through informal means such as mentorship, peer learning, or experimentation. This finding agrees with Alghamdi (2018) and Porter who established that human creativity and tacit knowledge are at the core of sustaining innovations in SMEs.

Yet, as stated in your dissertation (Section 1.4.8), thick employment barriers remain:

- Talent retention issues: lack of career advancement, uncompetitive salaries.
- Absence of formal training or upskilling programs for innovation
- Brain drain to other large tech firms and foreign employers

With the constraints imposed above, UAE SMEs seem to over-rely on person-based innovation modes rather than systematic-scalable ones. This further promotes the pressing need for formalisation into internal knowledge-sharing systems. According to Mohagheghi-Fard (2019) and Turner (2023), without a structured practice of knowledge management, the long-term sustainability of such innovative practices would be compromised.

5.3 Environmental Innovation and Sustainability

The evolving nature of environmental innovation is distinctive in its conceptual acceptance yet is practically appraised by the idiosyncrasies prevailing in the industry (OECD, 2017). Whereas many firms use eco-innovation marketing to espouse ethical benefits, large diversities seem to arise. Few had formal WEEE disposal systems or solar-assisted infrastructure or were in the active pursuit of eco-certifications like ISO 14001 (European Commission, 2020).

Such perspectives are echoed in research asserting that whilst many SMEs do understand the strategic benefits of environmental innovation, financial constraints, regulatory ambiguity, and dim consumer awareness are often the foremost inhibitors of its implementation (World Bank, 2019; UNCTAD, 2018). The expenses of certification are considered a discouraging factor, since there is little associated support for eco-innovation at the local level. It seems that these discouragements outweigh the few incentives provided externally through the UAE government for green transformation (Government of UAE, 2022).

Nevertheless, consumer pressures that are increasingly concerned with sustainability, in conjunction with the UAE harmonizing with international environmental standards, are indicative that eco-innovation could transition from being a voluntary act to a must-do in the next few years. SMEs that will benefit from having environmental stewardship on board in the early phase will enjoy the early-mover advantages in the local and export markets.

5.4 Organizational Learning and Knowledge Sharing

Knowledge sharing has certainly made a very strong case for granting opportunities to innovation processes and conversely, it exhibits many weaknesses among these smaller enterprises. Most companies communicate informally, either not documenting

knowledge or systematically capturing it. This trend resonates with your findings in the thesis (Chapter 1.4.5), which stated that many SMEs failed to set up structured systems for knowledge because of the reasons of lack of time, tools, and managerial awareness (Turner, 2023).

The lack of structured systems stifles continuity in knowledge sharing, which is a real threat-especially with employee turnover-to cross-functional innovations where marketing, logistics, and technical set-ups synergize their intelligences in product or/and processes improvement. Examples of such internal ecosystems for innovation could be monthly idea forums; innovation KPIs; and digital idea boards- all helping to enhance knowledge diffusion and intrapreneurship.

5.5 UAE Policy Ecosystem and Innovation Infrastructure

To enable the innovative capability of small and medium enterprises (SMEs), the UAE government has invested much capital in creating a setting favourable for SMEs. Some of these initiatives include the National Innovation Strategy, Dubai SME 100, and Dubai Internet City, offering infrastructure, financing, and mentorship to high-potential ventures. As discussed in this research, such efforts work to digitally mature SMEs in scaling up operations, reaching overseas markets, and accessing export channels.

It is indeed true that micro-SMEs and startups often do not have the organizational capacity or even the knowledge to fully adopt such policies for all the benefits. The above points suggest an outreach strategy, a simplified grant application process, and a capacity-building workshop aimed specifically at micro-enterprises and sole proprietorships.

5.6 Synthesis of Theory and Practice

These SMEs in this sector have Schumpeterian innovation features of "creative destruction", in which they change the linear "produce-use-dispose" mobile phone into a form where product lifecycles are extended, and electronic waste is reduced. The evidence supports the RBV framework to say that SMEs with internal capabilities are prepared to capture value from innovation: digital fluency, for example, and team-level innovation culture (Barney, 1991; Gao, 2019).

These findings would also lend themselves to an ecosystem view of innovation: that is to say, that firm-level capability would need to be complemented by a strong enabling environment—which would include digital infrastructure, educational alignment, access to finance, and regulatory clarity. That mirrors your literature review call for multi-level collaboration between government, academia, and industry to encourage systemic innovation (Garcia, 2023; Serrano, 2017).

6. Conclusion

The research elucidates how strategic innovation can enhance the performance, competitiveness, and internationalisation of UAE SMEs in mobile phone recycling and

reselling (OECD, 2017; European Commission, 2020). A qualitative case study research method was adopted to study all innovations, from their definition and application to maintenance in these companies. The finding from the study, in summary, puts innovation as an operational enabler and a strategic necessity; since it relates directly to product development, digital transformation, and eco-sustainable businesses.

Innovation in SMEs builds value mainly through efficiency gains, market access, and ensuring sustainability (Global Innovation Index, 2023). This led to the further identification of barriers to systemic innovations, such as lack of skills, limited access to finance, poor knowledge-sharing mechanisms, and different interpretations of varied policies. The evidence here concurs broadly with the literature, warranting a more urgent response for integrated innovation strategies tailored to fit SME ecosystem circumstances in developing economies (UNCTAD, 2018).

Such a situation enhances the UAE climate to further encourage innovation in SMEs, being aided by advanced infrastructure, future-driven policy frameworks, and excellent global enterprise linkages. The disparate availability of support for innovation, particularly across the micro and early-stage landscape of SMEs, calls for inclusive innovation policies and funding programs (Government of UAE, 2022).

The present study enriches the theoretical discussion on SME innovation by contrasting the Resource-Based View with innovation systems thinking and real-world empirical evidence from the SME innovation undercapitalization of a high-potential–yet-sparsely studied sector. It further offers an applied framework for SME owners, policymakers, and investors interested in promoting innovation-led growth in SMEs. If the structure impeding innovation is dismantled and enabling environments are put in place, the UAE may tap further into its SME sector's substantial innovative potential to augment economic resilience, sustainability, and enduring global competitiveness.

7. Recommendations

7.1 Recommendations for Practice

a) **Innovation Training and Capacity Building:** Continuous Professional Development Programmes for SME Leaders and Employees: Policymakers and industry stakeholders can strengthen their upskilling investment by focusing on continuous professional development programmes on innovation management, digital literacy, and sustainability for SME leaders and employees. Such partnerships can then be created for skill transference through the collaboration of academic institutions and innovation hubs.

b) **Enhancing the Digital Infrastructure and Support Platform**: Practical-Modal Accessibility Affordability-Modes for SMEs will be more affordable for better activation of technological innovation. Create a public-private partnership that will promote not only the electronic commerce tools for subscribers, but also appropriate measures related to cybersecurity solutions, as well as mobile

marketing technology to suit the specific features with which these micro, small, and medium enterprises live.

c) **Design Financial Instruments Inclusive of All Groups**: The UAE should further open access to other alternatives through its financial institutions in terms of microloans, crowdfunding platforms, and innovation grants to micro-SMEs and early-stage innovators who do not pass the stage of qualification for traditional lending systems.
d) **Encourage Eco-Innovation through Financial Incentives:** The incentive mechanisms for green innovation funds, tax rebates, and subsidies for practices within the circular economy should also be introduced for SMEs to encourage them toward environmentally friendly practices. Awareness campaigns and programs for technical support will also promote the adoption of eco-innovation.
e) **SME Commodity Clusters for Innovation:** Establishing innovation clusters under the various sectors for example the recycling and circular economy sectors will have the benefits of enabling collaboration, reducing costs and enhancing knowledge exchange. Government agencies can play a pivotal role in establishing these ecosystems through policy and infrastructure support.

7.2 Recommendations for Future Studies

a) Cross-Country Comparative Studies: Future research should also examine innovation practices in SME recycling activities in different countries so that comparative insights can be drawn, and best practices contextualised to the UAE.
b) Longitudinal Studies on Innovation Impact: Ultimately, research that follows the long-term effects of innovation adoption on SME growth, survival, and environmental performance can provide stronger evidence for guiding policy and investment decisions.
c) Fintech and Digital Financing Models: With the rise of fintech in the region, it would be worthwhile to explore further the potential for digital financing services to facilitate SME innovation.
d) Innovation in Informal and Micro-Enterprises: Research should turn to consider innovation behaviour and constraints in the SMEs of the informal sector and micro-entrepreneurs, who are often neglected in the literature.
e) Gender and Inclusivity in Innovations of SMEs: A more detailed analysis of gender barriers and opportunities regarding SME innovation processes would contribute to the formulation of more inclusive innovation strategies and policies.

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article. The research was conducted independently, without any financial, personal, or professional affiliations that could influence the findings or interpretations. No external funding was received for this study.

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