Can We Be Circular and Digital Without Creating Social Blind Spots?

A Policy Perspective for Sustainable Transformation in Qatar and the GCC

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Circularity and digitalization are increasingly shaping the architecture of modern supply chains. Across industries, firms are encouraged to repair rather than discard, trace rather than estimate, and optimize rather than overconsume. Circular economy strategies aim to reduce waste and improve resource efficiency, while advanced digital technologies, such as artificial intelligence, blockchain, the Internet of Things (IoT), and data analytics, enable real-time visibility and predictive control. Theoretically, this convergence appears highly beneficial: cleaner systems, greater transparency, and stronger competitiveness.

However, implementation reveals a more complex reality. The critical question is no longer whether circular and digital transformation is desirable, but whether it can advance without generating new social vulnerabilities. This concern underpins a recent study co-authored with Professor Salomée Ruel, Professor of supply chain management at EMLV (De Vinci Higher Education – De Vinci Research Center), titled "*Managing Social Sustainability Paradoxes in the Digitalized Supply Chains for the Circular Economy*" and published in the *Journal of Purchasing and Supply Management*:

The Journal of Purchasing and Supply Management is a leading international, peer-reviewed journal in the field of purchasing and supply management published by Elsevier. It has an Impact Factor of 8.7, is ranked Q1 in its subject category, and is classified as "A" in the ABDC Journal List. The research also attracted practitioner attention through a feature article in the French logistics magazine Voxlog, underscoring its relevance to both academic and managerial audiences:

The study examines Circular Digitalized Supply Chains (CDSCs), which integrate circular practices (reduce, reuse, remanufacture, recycle)

with advanced digital infrastructure. While much of the existing literature emphasizes environmental gains and operational efficiency, this research centers on social sustainability: employment stability, fair working conditions, workforce inclusion, supplier equity, and equitable access to digital capabilities. Its central premise is that environmental and technological progress do not automatically ensure social progress.

Drawing on qualitative interviews with 22 senior managers across four sectors—food processing, consumer electronics, chemicals and materials, and fashion—the study identifies structural tensions that arise when circular and digital initiatives unfold simultaneously. Rather than viewing these tensions as temporary obstacles, they are conceptualized as persistent paradoxes requiring deliberate management. Four interrelated paradoxes emerge: progress, efficiency, control, and governance.

Paradox #1: Progress - when "green" innovation shifts social risk

The progress paradox highlights the dual nature of technological innovation. Digital tools enable reverse logistics, predictive maintenance, smart sorting, and enhanced traceability, all of which are core enablers of circularity. However, automation and data-driven systems may displace certain job categories, intensify uncertainty, and marginalize suppliers or workers with limited digital readiness, contributing to the emergence of two-speed supply networks. Innovation intended to promote sustainability may therefore redistribute social risk rather than eliminate it. Addressing this tension requires embedding workforce upskilling and SME digital enablement within transformation strategies and incorporating social indicators, such as employability and digital literacy, into performance dashboards alongside environmental and financial metrics.

Paradox #2: Efficiency - optimizing without compromising fairness

The efficiency paradox reflects the enduring performance logic of supply chain management. Cost reduction, inventory optimization, and speed remain dominant priorities, even within circular initiatives. These pressures can conflict with commitments to fair labor practices, inclusive procurement, and long-term supplier development. Because social objectives are often less immediately quantifiable than financial targets, they risk marginalization during implementation. Institutionalizing social performance through explicit key performance indicators within procurement and supplier evaluation systems is therefore essential. Responsible sourcing must be operationalized through measurable criteria rather than articulated solely as an aspiration.

Paradox #3: Control - digital transparency versus confidentiality and dignity

The control paradox concerns transparency and power dynamics. Digital technologies enhance visibility across supply networks; blockchain systems, IoT tracking, and digital audits can expose labor violations or environmental non-compliance. While such transparency strengthens accountability, it may also raise concerns regarding surveillance, data ownership, and power asymmetries, particularly for smaller suppliers. Transparency thus becomes inherently paradoxical: it promotes responsibility while potentially undermining trust. Effective transformation requires governance frameworks that clarify data ownership, define safeguards, and involve stakeholders in the co-design of monitoring mechanisms, ensuring that transparency protects dignity and fosters collaboration.

Paradox #4: Governance - too many social objectives and not enough explicit trade-offs

The governance paradox reflects the growing complexity of sustainability management. Social sustainability spans human rights,

occupational safety, inclusion, ethical sourcing, and community impact. As circular and digital initiatives expand, reporting requirements and performance indicators proliferate, leading to increased fragmentation and organizational fatigue. Without integration, sustainability risks becoming a collection of disconnected initiatives managed in silos. Addressing this challenge demands coordinated leadership and alignment across procurement, human resources, IT, and operations, supported by structured dialogue around trade-offs rather than isolated functional optimization.

These tensions cannot be resolved; they can only be managed through learning. The study reaches a pragmatic conclusion: these paradoxes will not disappear through more sophisticated reporting or simply by adopting a newer tool. They call for dynamic management based on the genuine commitment of stakeholders (suppliers, service providers, affected regions, and employees), on unwavering transparency—including when it highlights what is unsettling or resistant—and on a constant capacity for innovation and learning. Above all, this management requires the ability to coordinate strategies that are sometimes sequential, addressing certain aspects successively rather than simultaneously, without ever relegating social sustainability to a mere variable.

In short, the circular, digitalized supply chain will only be truly sustainable if it is also socially sustainable, and this will not happen as a side effect. It must be desired, designed, measured, and balanced.

Relevance for Qatar and the GCC

These findings are particularly relevant within the context of Qatar's accelerated digital transformation and economic diversification agenda. The research aligns closely with the pillars of Qatar National Vision 2030 (QNV 2030): economic development, human development, social development, and environmental sustainability. As Qatar advances smart infrastructure, digitally enabled logistics, and sustainability-driven industrial policy, supply chains are becoming increasingly sophisticated. At the same time, they depend on diverse labor forces and SME ecosystems that may exhibit varying levels of digital readiness. Without deliberate social alignment, digital acceleration risks widening capability gaps across firms and workforce segments. At the same time, this transition presents a significant strategic opportunity. Embedding social safeguards within procurement frameworks, SME digital support initiatives, and workforce reskilling programs from the outset can prevent the emergence of unequal "two-speed" supply networks. The framework developed in this study offers policymakers and industry leaders a diagnostic tool for anticipating tensions and designing inclusive digital strategies before unintended consequences materialize.

Circular and digital transformation does not inherently produce social sustainability. The paradoxes of progress, efficiency, control, and governance are structural features of systems undergoing simultaneous technological and environmental change. Managing them requires transparent recognition of trade-offs, stakeholder engagement, integrated measurement systems, and coordinated leadership. Environmental and technological advances must be balanced with workforce stability, supplier inclusion, and social cohesion.

The strategic challenge is therefore not whether circular and digital supply chains can be built—they can—but whether they can be developed without creating new forms of social invisibility. For rapidly transforming economies such as Qatar and the wider GCC, ensuring that sustainability remains socially grounded is not merely desirable; it is essential for long-term resilience and inclusive growth.