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Navigating the Twin Transition: Digital Transformation and Sustainability in Low-Tech Industries

A Small and Medium-Sized
Companies' Perspective

foreword by Tindara Abbate

UNIVERSITÀ

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Alla mia famiglia, per come è e come sarà

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Introduction

In the modern dynamic landscape of business, small and medium-sized companies (SMEs) face unique challenges and opportunities, in adapting and proactively competing in the global arena. Regardless of the industries, companies are facing increasing challenges associated with both digital transformation and sustainable transition. Indeed, as digital technologies continue to evolve, they offer companies new valuable business opportunities as well as new useful tool and approaches to innovate, thus enhancing their competitive advantage. Simultaneously, the even more increasing demand for sustainability compel these businesses to increase their sustainable commitment, not only to meet regulatory standards but also to align their strategies and operations with both societal and environmental goals. On one hand, the integration of digital technologies into business operations is not merely a trend but has become an imperative for companies willing to build a robust competitive base. However, it still difficult to individuate precise boundaries for digital transformation, as it refers to the development and the implementation of a highly heterogenous set of digital technologies, ranging from the simpler blockchain technology, Internet of Things to Artificial Intelligence and machine learning algorithms. Even though their integration in business operation is often gradual, collectively they are able to reshape business value creation processes as well as business model archetypes. On the other hand, although sustainability is not a recent concept, in the last decades the escalating impacts of climate changes, biodiversity losses and consequently rise in social inequality, has underscore the urgent need for a systemic economic shift. Since companies are aware of the detrimental impacts their business activities could have, they are increasingly integrating sustainable practices in their business models, not only to mitigate these risks, but also to comply with regulatory requirements while meeting the growing consumer demand for environmentally responsible products. If the economy is becoming even

more digital, then also the digital transformation must be as sustainable as possible to minimize the risks associate with its growing pervasiveness. This awareness of moving along the dual track of digital transformation and sustainable transition has requires companies' significant changes. As companies enhance humans-machines integration through the use of some interconnected digital solutions, they must also consider the environmental and societal impacts of this growing digital transformation. This is particularly crucial for all SMEs that need to continuously adapt to remain competitive in the global markets. The shift toward this twin transition implies some significant changes in business strategies. That is, companies that once focused solely on internal operations and profit maximization are now embracing sustainable practices in a more organic way, to promote social well-being. Initially, businesses approach this transition tentatively, often adopting technological and green solutions that did not fully adhere to societal needs. Now, the driving forces behind this transition have become more apparent. Indeed, consumers are increasingly become more conscious, thus increasingly requiring sustainable products. In addition, the emerge of new technologies has created new business opportunities that can only be fully realized through the integration of such digital solutions.

For instance, IoT, artificial intelligence and big data analytics offers SMEs some useful tools to optimize their operations, thus minimizing waste and reducing their environmental footprints, while also maximizing value extraction processes. Moreover, nowadays, the shift toward sustainability is not more a trend but a strategic imperative to drive long-term profitability, thus ensuring growth and survival. In the light of these two prominent paradigms, this work offers a conceptual synthesis between digital transformation and sustainable transition, by preliminary separately exploring these two transitions, and then providing a cross-sectional analysis based on the synergies between the two phenomena. Specifically, the first chapter introduces digital transformation through its innovative components. Using a bibliometric literature review, it explores the landscape of new technological solutions and their impacts on even more data-based companies, in order to explore how these innovations are reshaping business architectures. The second chapter shifts the focus to sustainability as a critical paradigm for a sustainable future. It begins by delving into the analysis of sustainability withing the business environments, starting from the overlapping among its social, environmental and economic dimensions in the light of Triple Bottom Line approach, and then examines strategies that companies can employ to achieve a sustainable transition.

Lastly, the final chapter highlights the synergies between digital and sustainable imperatives. Through an analysis of the low-tech wine industry, based on a combination of mixed methods approach and a multiple case study on a sample of wineries of the Assovini Sicilia association, this chapter provides empirical evidence of the evolutionary paths underpinning the twin transition for SMEs. The focus is on demonstrating how this transition can create a solid, broad and sustainable competitive advantage.

Overall, this study offers a comprehensive overview of the configurational pathways that SMEs can pursue by leveraging both digital and sustainable levers. In conclusion, the work aims to unveil the links between digital and sustainable transitions, shedding light on the actionable factors for achieving competitiveness, through a profitable combination of diverse conceptual and practical perspectives.