**Title**  
Technology-Enabled Value Chain Transformation in the Wine Industry

**I want to submit an abstract for:**  
Conference Presentation

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**Keywords**

wine industry, digital transformation, business transformation

**Research Question**

How can we holistically view the knowledge domain of wine industry digital transformation? How can we bridge the gap between academic research and practical implementation?

**Methods**

By synthesizing academic insights with real-world perspectives, we aim to inform strategies and policies that can empower the wine industry to navigate its challenges.

**Results**

This research contributes a holistic overview of the knowledge domain, bridging the gap between academic research and practical implementation in the field of digitization in agriculture.

**Abstract**

The wine industry, like many other sectors, faces a myriad of challenges driven by evolving climatic conditions, increasing regulatory demands for sustainability, and shifting consumer preferences. The sector must adapt to meet these challenges while contending with financial constraints that hamper innovation, particularly for small- and medium-sized wineries. In response to these multifaceted issues, this research takes a dual-pronged approach to explore the potential of technology-driven solutions within the wine industry.
To solve the earlier mentioned challenges simultaneously, technological innovations are expected to have an ever-increasing role in agricultural production practices. Artificial intelligence (AI) is a relatively novel technology that has multiple benefit offerings including improvement in the efficiency and sustainability of operations, resulting in a potential solutions to the previously described threats. With agriculture encountering a complex array of challenges, this dissertation restricts its focus to the realm of artificial intelligence exclusively within the wine sector. Such a deliberate limitation allows for a more nuanced exploration of AI's potential applications, addressing the unique complexities and opportunities presented by the wine industry while avoiding the unwieldy scope associated with the broader agricultural landscape. Also, academic work focused on the implementation of AI in wine is relatively scarce, therefore extending research in this field would provide important scientific and practical insights in the field of business informatics and artificial intelligence research.

The term ‘digital transformation’ can be defined in several ways and authors provide various interpretations from multiple perspectives. The associated term, ‘Fourth Industrial Revolution’ (also referred to as ‘Industry 4.0’) was defined as a “digital revolution... characterised by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres”. (Schwab, 2016) An additional interpretation is the application of technology that allows major business improvements to be achieved with the objectives of business model innovation and customer experience redefinition. (Warner & Wäger, 2019)

First, we undertake a rigorous bibliometric review of academic literature related to digitization and artificial intelligence (AI) implementation in agriculture. This comprehensive analysis examines the evolving landscape of scholarly contributions, providing insights into the historical development of the field and identifying key trends and emerging themes. By analyzing a rich corpus of research, we gain a deeper understanding of the knowledge domain, shedding light on the pivotal role of AI, machine learning, computer vision, and intelligent agents in reshaping the broader agricultural landscape and winemaking in particular.

Building on this academic foundation, our second objective delves into the practical landscape of the Hungarian wine industry. We conducted a survey among Hungarian wineries to assess their current digitization practices, future plans, perceived risks, and drivers for digitization initiatives. Initial findings reveal intriguing insights: while efforts are underway to leverage digital solutions to enhance financial processes, winemaking and grape growing practices, and consumer experiences, a significant portion of Hungarian wineries remain resistant to digitization. These results underscore the challenges and opportunities that lie ahead in the pursuit of digitization in the wine sector.

This research contributes a holistic overview of the knowledge domain, bridging the gap between academic research and practical implementation in the field of digitization in agriculture. By synthesizing academic insights with real-world perspectives, we aim to inform strategies and policies that can empower the wine industry to navigate its challenges, embrace digital transformation, and ensure a sustainable and prosperous future.

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