

## **The Influence of Artificial Intelligence in the Wine Industry**

A perspective on vine growers and wine makers, the hospitality industry and consumers

Author: Tina Vormfenne

### **1. Motivation for choosing this Topic**

Artificial Intelligence is a very up-to-date topic, which also sparks a lot of controversy. Besides many beneficial effects there are also a lot of concerns. I found it interesting to do the research and find out for myself how far AI has already been embraced by the wine industry and if the results that I would find out match my previous assessment.

### **2. Problem/objective**

Artificial Intelligence is entering our lives more and more. Clearly it brings a lot of advantages and can make things easier, sometimes with just little tasks like suggesting a recipe based on what is in your fridge. But it also holds negative impacts: Cutbacks in available jobs, concerns about personal privacy or AI-generated fake pictures, videos and misinformation. Overall it is a very controversial topic and peoples' opinions about it can be quite diverse. The goal of this paper is to showcase if and how AI is used in the wine industry and how this controversy of advantages and disadvantages plays out in different sectors of the industry.

### **3. Methodology**

I decided to split the paper into different perspectives: the vine growers, the wine makers, the hospitality sector and the consumer. The perspective of vine growers is probably the one with the most progress into AI. For the other perspectives, wine makers, hospitality sector and consumer, it was more difficult to find solid sources and articles to use for this paper. Since there is development and progress in the world of AI every day, there is news coming out almost daily that report about the latest technologies and success stories, also for the wine industry. I tried to find real life examples where AI is used in a way that benefits customers or wine makers.

The coverage of some topics, e. g. a virtual sommelier in a restaurant, could feel a bit one-sided, since the companies developing AI-powered solutions of course advertise their products and show them in the best light. For that reason, I was careful with my source selection and tried to rely as much as possible on online articles from renown sources and independent journalism, for examples Forbes, Business Insider or WineBusiness Monthly.

One problem that I experienced repeatedly, is that in some cases it was hard to draw the line between digitalization and the use of AI. Digitalization converts analog data into digital formats

and enhances efficiency with software and digital tools. AI means that algorithms learn, adapt, and make decisions, making digitalized processes intelligent and autonomous. A chatbot that recommends a Barossa Valley Shiraz for grilled lamb is not the definition of AI and in some sources digitalization and AI were clearly mixed up.

#### **4. Content**

The paper approaches the influence of AI in the wine industry from different perspectives. The impact in the vineyard is probably the highest one of all sectors. Since precision farming has been around since the 1990s, now it is just another step the enhance already established technologies like GPS, sensors and drones with AI-powered platforms and apps to achieve lower costs and promote sustainable farming. The agricultural industry feeds the world and the progress into AI is very much ahead, so vine growers and vintners can now benefit from the developments that have already been made. Crop monitoring, irrigation management and autonomous farming are key factors.

The use of AI technology in the winery is less common than in the vineyard itself, here it can be used in the crucial process of fermentation, where sugar levels, nutrients, pH, temperature and density of the ferment can be analyzed in real time.

Chapter 3 looks at the influence of AI in the hospitality sector and for the consumer directly. The Internet of Things and AI technology are used to optimize storage, Near Field Communication Chips improve wine tracking and can prevent fraud. Virtual sommeliers use AI to provide personalized wine recommendations, pairing suggestions, and curated wine lists. These systems analyze flavor profiles, regional preferences, and price ranges to offer tailored suggestions. They enhance consistency and scalability and offer precise recommendations. However, while AI excels in data processing, it lacks the human touch and intuition of traditional sommeliers, making it a supportive tool rather than a full replacement.

#### **5. Conclusion**

Overall, the use of AI in the wine business is not yet very widespread. The most use is made in the vine growing sector, but initial costs are high, and it only makes sense for big organizations. Virtual sommeliers, in restaurants, stores or for private use, are still not very established in the market, which is mainly due to the biggest factor in the debate over AI in the wine industry: whether machines can truly replace human expertise. Winemaking is an art rooted in tradition, sensory skills, and emotional connection. AI can assist with grape analysis and food pairings, but it lacks intuition, storytelling and emotional intelligence. In conclusion, AI can be helpful and beneficial to the wine business but will never replace tradition and human passion.