

Czech University of Life Sciences Prague

Faculty of Economics and Management

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Bachelor Thesis

Consumer willingness to pay for AI-designed products

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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BACHELOR THESIS ASSIGNMENT

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Business Administration

Thesis title

Consumer willingness to pay for AI-designed products

Objectives of thesis

This bachelor thesis explores how consumers perceive and evaluate a fully AI-designed alcoholic beverage, with a particular focus on how its AI origin affects willingness to pay. The research combines literature insights with real-world data gathered through surveys and open responses. In addition to price, the study looks at factors like consumer trust, age, and reactions to the product's AI-created packaging design. The goal is to better understand whether AI adds value in the eyes of consumers — or if it creates doubt or hesitation instead.

Methodology

This thesis uses a mixed-methods empirical approach, combining a structured online survey and open-ended questions to examine consumer willingness to pay for an AI-generated alcoholic beverage. Respondents will evaluate the product both with and without information about its AI origin, allowing for comparison in price perception. The survey will also measure factors such as trust in AI, perceived uniqueness, and reaction to the AI-generated packaging design. Quantitative data will be analyzed using descriptive statistics and basic hypothesis testing, while qualitative responses will provide additional insight into consumer attitudes and reasoning.

The proposed extent of the thesis

30-40

Keywords

Willingness to Pay, Artificial Intelligence (AI), Product Design, Consumer Perception, Alcoholic Beverage Industry, Behavioral Economics

Recommended information sources

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Declaration

I declare that I have worked on my bachelor thesis titled "Consumer willingness to pay for AI-designed products" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break any copyrights. I further declare that during the preparation of this thesis, AI-assisted tools were used to support the writing and editing process, including the refinement of language and structure. All research design, analytical reasoning, interpretation of results, and intellectual conclusions are my own. The AI tools were used solely as a writing aid and did not generate the research content, data, or academic arguments presented in this work.

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Consumer willingness to pay for AI-designed products

Abstract

This bachelor thesis investigates respondents' Willingness to Pay (WTP) for an AI-designed alcoholic beverage, using Katlenburger's Nano-Fizz as a real-world case study. As artificial intelligence becomes increasingly integrated into food and beverage product development, understanding consumer responses to AI-origin disclosure represents a critical gap in the existing literature. Drawing on theoretical frameworks including Prospect Theory, the Effort Heuristic, and Algorithm Aversion, the study hypothesises that AI disclosure will produce a statistically significant reduction in WTP and that this reduction will be driven primarily by the perceived absence of human labour. A sequential disclosure experiment was conducted with 30 university students across Prague, in which participants first evaluated the beverage blindly and stated an initial WTP, before being informed of its AI origin and asked to re-evaluate. Quantitative analysis using the Wilcoxon Signed-Rank Test revealed a nominal decrease in mean WTP of 6.95 CZK following disclosure, which did not reach statistical significance ($p = 0.148$). Thematic coding of open-ended responses partially confirmed the role of the Effort Heuristic among respondents who did reduce their valuation. The findings suggest that a strong positive sensory experience can act as a psychological buffer against the Algorithm Discount, with implications for how AI-designed beverage products are marketed and introduced to consumers.

Keywords: willingness to pay, artificial intelligence, algorithm aversion, effort heuristic, Nano-Fizz, consumer behaviour, sequential disclosure, prospect theory, hedonic products, beverage industry.

Ochota spotřebitelů platit za produkty navržené umělou inteligencí

Abstrakt

Tato bakalářská práce zkoumá ochotu respondentů platit (WTP) za alkoholický nápoj navržený umělou inteligencí, přičemž jako případovou studii z reálného světa využívá nápoj Nano-Fizz od společnosti Katlenburger. Vzhledem k tomu, že umělá inteligence je stále více integrována do vývoje potravin a nápojů, představuje pochopení reakcí spotřebitelů na zveřejnění původu AI kritickou mezeru v existující literatuře. Na základě teoretických rámců, včetně teorie vyhlídek, heuristiky úsilí a averze k algoritmům, studie předpokládá, že zveřejnění AI povede ke statisticky významnému snížení WTP a že toto snížení bude způsobeno především vnímanou absencí lidské práce. S 30 vysokoškolskými studenty v Praze byl proveden sekvenční experiment, v němž účastníci nejprve slepě hodnotili nápoj a uvedli počáteční WTP, poté byli informováni o jeho původu z AI a požádáni o přehodnocení. Kvantitativní analýza pomocí Wilcoxonova testu s podpisem pořadí odhalila nominální pokles průměrné WTP o 6,95 CZK po zveřejnění, který však nedosáhl statistické významnosti ($p = 0,148$). Tematické kódování otevřených odpovědí částečně potvrdilo roli heuristiky úsilí u respondentů, kteří své hodnocení snížili. Výsledky naznačují, že silný pozitivní smyslový zážitek může působit jako psychologický nárazník proti algoritmické slevě, což má dopad na to, jak jsou nápoje navržené umělou inteligencí uváděny na trh a představovány spotřebitelům.

Klíčová slova: ochota platit, umělá inteligence, averze k algoritmům, heuristika úsilí, Nano-Fizz, chování spotřebitelů, postupné zveřejňování informací, teorie vyhlídek, hedonické produkty, nápojový průmysl.

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1 Introduction

The rapid advancement of Artificial Intelligence (AI) has moved beyond the realm of digital services and is now fundamentally reshaping the physical goods market. In the food and beverage industry, this shift is particularly visible as companies transition away from traditional, human-led product development toward algorithmic design. While the industrial benefits of this transition – such as increased speed and reduced costs – are well-documented from a corporate perspective, the consumer's reaction to algorithmically designed products remains a critical uncertainty. This is especially true for products like wine, where value has historically been tied to human craftsmanship, tradition, and a specific sense of place.

The core problem addressed in this thesis is the potential conflict between technological efficiency and perceived value. As more brands follow the lead of pioneers such as Katlenburger and their AI-designed beverage Nano-Fizz, it becomes essential to understand how the disclosure of AI involvement affects consumer psychology. The central question is whether AI innovation creates a premium that consumers are willing to pay for, or whether it leads to an erosion of the product's perceived authenticity and human character.

This research utilises a controlled experimental framework to measure Willingness to Pay (WTP) for an AI-designed beverage. By comparing a blind tasting – where taste is the only evaluative factor – with a sequential disclosure experiment in which the AI origin is revealed, this study seeks to identify the precise economic impact of AI transparency. The objective is not merely to determine whether consumers enjoy the taste of an AI-designed wine, but to quantify how much they are willing to pay for it once they understand that the recipe was generated algorithmically rather than by a human winemaker.

Ultimately, this work aims to provide a bridge between the production economics of AI design and the consumer psychology of trust and perceived value. In doing so, it offers strategic recommendations for how the beverage industry can navigate the transition toward algorithmic innovation without sacrificing the financial value historically tied to human tradition and craftsmanship.

2 Objectives and Methodology

2.1 Objectives

The primary objective of this bachelor thesis is to examine respondents' willingness to pay (WTP) for an AI-designed alcoholic beverage, specifically Katlenburger's Nano-Fizz, and to assess whether disclosure of the product's AI origin affects its perceived value among the surveyed sample of respondents. To achieve this, the following sub-objectives have been established:

- To measure the variance in price valuation before and after the AI origin disclosure using a sequential disclosure protocol.
- To compare the perceived value of AI-driven precision (i.e. the subjective assessment of worth encompassing both functional and emotional dimensions) against traditional human craftsmanship of AI-generated fruit wine.
- To identify demographic characteristics – specifically regarding age and income – that influence the acceptance of AI-designed consumables among the surveyed sample of respondents in Prague.
- To formulate recommendations based on the findings of this study for producers of AI-designed beverage products regarding the communication and transparency of AI involvement.

2.1.1 Research Hypotheses

The following two hypotheses have been established to examine the economic impact of AI origin disclosure and the psychological drivers of value:

H1: The disclosure of AI design as the product origin results in a statistically significant decrease in Willingness to Pay among the surveyed sample of respondents. This hypothesis tests the existence of the Algorithm Discount within the surveyed sample.

H2: The reduction in Willingness to Pay following AI disclosure is primarily driven by the Effort Heuristic, whereby respondents devalue the product due to a perceived absence of human labour rather than any objective deficiency in product quality. This hypothesis tests

whether the Authenticity Paradox is rooted in the absence of perceived human effort rather than in the sensory experience of the product itself.

2.2 Methodology

2.2.1 Research Design: Mixed-Methods Approach

This thesis utilises a mixed-methods empirical design. The design captures how price valuations change when the technological origin of a product is disclosed, while simultaneously identifying the psychological drivers behind those shifts – specifically the Effort Heuristic. This approach draws on the established principles of mixed-methods research, which combines quantitative measurement with qualitative insight to produce a more complete understanding of consumer behaviour than either method could achieve independently (Bryman and Bell, 2015).

2.2.2 Primary Data Collection I: Controlled Tasting Experiment

The first phase involves a sequential disclosure experiment conducted with a tasting group. The experiment proceeds in two stages:

- Stage 1: Blind Evaluation: Participants taste Katlenburger's Nano-Fizz without any branding or product information. They rate the flavour and state an initial Willingness to Pay based solely on sensory experience.
- Stage 2: Revealed Origin: The AI-designed bottle and its algorithmic origin are disclosed. Participants then re-evaluate their WTP and trust levels in light of this information.

The tasting group will consist of a minimum of 30 participants, recruited from university students across Prague. All tastings will be conducted under standardised conditions: identical serving temperature (approximately 8°C), identical glassware, and a neutral environment free from branding cues. Participants will be tested individually or in small groups of no more than five to prevent social influence on responses.

The objective of this phase is to measure how the disclosure of AI involvement overrides or modifies the physical taste preference established in Stage 1.

2.2.3 Data Analysis and Statistical Methods

Quantitative and qualitative analytical tools are applied to verify the two research hypotheses:

- **Data Quality Controls and Test Selection:** Prior to analysis, all WTP responses will be screened for outliers using boxplot inspection. Normality of difference scores will be assessed using the Shapiro-Wilk test. In the event that normality assumptions are violated, the Wilcoxon Signed-Rank test will be applied as a non-parametric alternative.
- **Paired Samples T-Test:** To determine whether the change in WTP within the tasting group between Stage 1 (blind evaluation) and Stage 2 (post disclosure evaluation) is statistically significant. This directly tests H1.
- **Thematic Coding:** Open-ended qualitative responses will be analysed using a deductive thematic coding approach based on three predetermined categories: (1) references to perceived effort or the absence of human labour, (2) references to authenticity or tradition, and (3) references to technological innovation or precision. Responses will be independently coded by two reviewers to ensure reliability. This directly tests H2.

3 Literature Review

3.1 AI in the Food and Beverage Industry

Artificial intelligence has transitioned from a theoretical future concept into a fundamental pillar of the modern food and beverage sector. This transition extends beyond mechanical automation and represents a structural shift into Industry 4.0 - a high-tech ecosystem where data, rather than mechanics alone, drives production (Hassoun et al., 2023). The industry is moving beyond simple efficiency gains; these digital tools are now being used to invent entirely new product categories, such as precision-fermented beverages and highly personalised nutrition (Hassoun et al., 2024).

This creative shift is made possible by the integration of AI with advanced sensory technologies. Systems incorporating electronic noses and digital tongues can now analyse flavour profiles with sufficient precision to predict consumer success before a single bottle is produced (Liang et al., 2021). In the wine and spirits sector, this is no longer a marginal application. Leading producers are already utilising algorithms to generate recipes and predict quality. Sapporo Breweries, for instance, partnered with IBM Japan to develop an AI system that analysed over 1,200 product formulations, with the company reporting time savings of 50 to 75 percent across various stages of new product development (IWSR, 2024). Similar algorithmic approaches to recipe generation and quality prediction have been documented more broadly across the winemaking sector (Chirita and Chirita, 2023).

Katlenburger's Nano-Fizz serves as a pertinent case study for this transition. As Europe's first fully AI-generated fruit wine, it represents a commercially viable step toward algorithmic product creation (Katlenburger GmbH, 2024). It is important to note, however, that this transition is rarely fully autonomous. The IWSR (2024) confirms that Katlenburger employed AI across the naming, recipe formulation, and packaging design of Nano-Fizz, while specialist human winemakers retained responsibility for finalising the recipe. This balance between algorithmic innovation and human oversight – where AI generates and optimises, but a human remains the final arbiter of quality – appears to represent the prevailing operational model in the industry at present.

3.2 The Authenticity Paradox: Human Craftsmanship vs. Algorithmic Precision

While industrial efficiency is typically viewed as a positive metric, the beverage industry – and the wine sector in particular – faces a significant challenge that may be described as the Authenticity Paradox. In many consumer categories, technological precision is equated with quality; however, in products driven by tradition and heritage, value is often derived from the intangible human element and a specific sense of place.

Perceived value refers to a consumer's subjective assessment of a product's worth relative to its cost, encompassing both functional and emotional dimensions (Varian, 2014).

The perceived value of wine is fundamentally tied to its origin and the narrative of its creation. Consumers generally view wines with a clear connection to terroir – the environmental and human factors of a specific region – as more authentic, and this perception directly correlates with a higher willingness to pay (Moulard et al., 2015). When the link to human craftsmanship and geographical heritage is replaced by algorithmic design, a product risks losing the authenticity that justifies its premium status (Moulard et al., 2015). This devaluation is particularly acute in hedonic markets. While technology can enhance the functional value of a product – making it more consistent or accessible – it often erodes its emotional value (Xu and Mehta, 2022). For goods like wine, which are consumed for pleasure and emotional resonance rather than purely utilitarian needs, AI-driven design can significantly damage perceived brand essence. Consumers may cease to view the product as a creative expression and instead perceive it as a mechanical output, generating a negative response upon disclosure of AI involvement (Xu and Mehta, 2022).

3.2.1 The Effort Heuristic and Perceived Value

At the heart of this psychological rejection lies a fundamental bias regarding human labour. Research consistently demonstrates a consumer preference for human-created work over AI-generated alternatives, driven primarily by the Effort Heuristic (Ragot et al., 2020). Under this heuristic, consumers use perceived effort as a proxy for worth and quality. When a product is labelled as AI-designed, it is rated lower not necessarily because of any objective deficiency, but because the absence of perceived human labour and investment renders the product less meaningful in the consumer's judgement (Ragot et al., 2020).

In markets where exclusivity and tradition are primary drivers of value, the introduction of digital tools remains contentious. While technology can amplify certain symbolic dimensions of a brand, there is a legitimate concern that over-automation diminishes the artisanal narrative that premium products depend upon (Sestino et al., 2023). For a product such as Nano-Fizz, the central challenge is therefore to navigate this tension: utilising algorithmic precision without sacrificing the emotional and traditional capital that defines value in the beverage sector (Sestino et al., 2023).

3.3 Algorithm Aversion and Consumer Trust

The industrial drive toward algorithmic precision frequently collides with a significant psychological barrier known as algorithm aversion. This phenomenon describes the tendency for individuals to lose confidence in an algorithm considerably faster than in a human counterpart after witnessing an equivalent error, even when the algorithm demonstrably outperforms human judgement in statistical terms (Dietvorst et al., 2015). In a decision-making context, consumers often irrationally discount automated systems because they hold them to a higher standard of accuracy – once a machine errs, trust is rapidly replaced by scepticism, a response that does not apply with equal force to human error (Dietvorst et al., 2015). This scepticism toward automated systems reflects a broader psychological tendency to resist influence from non-human sources, particularly when decisions involve subjective judgement rather than purely objective criteria (Cialdini, 2001). This aversion is not uniform across all product categories but is highly task-dependent. Research indicates that consumers are far less likely to trust algorithms for tasks perceived as subjective rather than objective in nature (Castelo et al., 2019). While AI is increasingly accepted for utilitarian functions such as financial forecasting or logistics optimisation, a deep-seated belief persists that machines lack the sensory and affective capabilities required for subjective experiences – such as evaluating flavour or artistic merit. Castelo et al. (2019) demonstrate that this mistrust stems not from poor algorithmic performance but from consumers' perception that subjective tasks are fundamentally beyond the reach of computational processes. In the context of the beverage industry, evaluating wine is an intensely subjective human experience, and consumers may therefore instinctively doubt an algorithm's capacity to determine what makes a drink enjoyable – representing a significant psychological barrier for products relying on algorithmic design.

3.3.1 The Hybrid Model as a Psychological Solution

One strategy to mitigate this aversion is the implementation of a hybrid creation model. Dietvorst et al. (2018) demonstrate that people are significantly more willing to utilise an imperfect algorithm when given the opportunity to modify or oversee its output, even marginally. This sense of human control increases satisfaction with the process and substantially reduces the loss of consumer confidence typically associated with full automation.

The operational model adopted for Nano-Fizz – in which AI generates the initial formulation while specialist human winemakers act as the final arbiters of quality is consistent with this finding (Katlenburger GmbH, 2024; Dietvorst et al., 2018). By positioning the human expert as the final decision-maker, the brand does not merely address a technical quality-control requirement; it strategically responds to the psychological roots of algorithm aversion. This hybrid approach therefore enables the industry to leverage algorithmic innovation while maintaining the human oversight necessary to sustain consumer trust.

3.4 Behavioral Economics: Willingness to Pay and the Effort-Value Link

To connect the psychological roots of consumer distrust identified in the preceding sections to their measurable market consequence, it is necessary to examine the economic metric of Willingness to Pay. In classical microeconomics, WTP is formally defined as the maximum price a consumer is prepared to pay for a specific good before opting for a substitute, assuming a rational calculation of utility in which price is weighed against the absolute value of a product's attributes (Varian, 2014). Within this framework, WTP reflects the point at which a consumer's perceived benefit from acquiring a good equals its price, representing the upper boundary of consumer surplus (Varian, 2014). Economists distinguish between use value – the utility derived directly from consuming the product – and non-use value, which encompasses emotional, symbolic, and heritage dimensions. For hedonic products such as wine, non-use value frequently constitutes the majority of perceived worth, meaning that any factor disrupting the emotional or symbolic dimensions of the product will have a disproportionate impact on WTP relative to purely functional goods. However, as the mechanisms described in sections 3.2 and 3.3 suggest, the erosion of perceived authenticity and the task-dependent nature of algorithm aversion together produce an economic outcome that classical WTP theory alone cannot account for. This pattern of irrational consumer

valuation is consistent with broader evidence that human decision-making systematically departs from rational models across a wide range of purchase contexts, driven by anchoring, relativity, and the perceived value of effort invested in a product (Ariely, 2008).

3.4.1 Prospect Theory and the Loss of Authenticity

Behavioral economics offers a more complete explanatory framework. According to Prospect Theory, consumers do not evaluate value in absolute terms but judge it relative to a specific reference point, and a core finding of this framework is loss aversion – the principle that the psychological pain of a perceived loss is considerably greater than the pleasure derived from an equivalent gain, estimated at approximately twice the intensity (Kahneman and Tversky, 1979). In the context of the beverage industry, a consumer's reference point for wine is typically one of human craftsmanship and tradition. When the AI origin of a product such as Nano-Fizz is disclosed, the information does not function as a neutral update to the consumer's evaluation. Rather, it registers as a loss of the intrinsic human character of the product. Loss aversion predicts that this perceived reduction in authenticity will disproportionately suppress WTP, as the consumer experiences the disclosure as a subtraction of traditional value rather than an addition of technological innovation (Kahneman and Tversky, 1979).

3.4.2 Empirical Evidence in the Hedonic Sector

This theoretical prediction is supported by empirical research into consumer responses to AI-designed products. Zhang et al. (2022) demonstrate that while consumers may accept or even favour AI involvement in utilitarian goods – where precision and consistency are the primary sources of value - they exhibit clear resistance in hedonic categories where emotional experience and pleasure are the dominant drivers of purchase. Because beverages such as wine are consumed for enjoyment rather than purely functional benefit, the disclosure of AI involvement frequently acts as a negative anchor on perceived value (Zhang et al., 2022). Furthermore, Zhang et al. (2022) find that as consumer knowledge of AI increases, an initial curiosity effect diminishes, leading to a further reduction in WTP over time. For a product such as Nano-Fizz, this suggests that technological novelty alone is unlikely to sustain a price premium once consumers develop a clearer understanding of the perceived absence of human labour in its creation.

Taken together, the theoretical framework of Prospect Theory and the empirical evidence from hedonic product research converge on a consistent prediction: the disclosure of AI involvement in a wine product will produce a measurable and disproportionate suppression of WTP. As a fruit wine occupying a hedonic product category, Nano-Fizz represents precisely the context in which this effect is most likely to be observed (Zhang et al., 2022; Xu and Mehta, 2022).

3.5 Consumer Demographics and the Digital Native Effect

The final factor moderating the economic valuation of AI-designed products is the demographic profile of the consumer. Attitudes toward artificial intelligence are fundamentally shaped by generational experience and prior technological exposure. Research indicates that increased AI interaction can strengthen brand trust and positively influence purchasing decisions among younger cohorts such as Generation Z, yet this acceptance is not unconditional – it remains highly contingent on the perceived accuracy and reliability of the technology, as well as the individual's accumulated experience with AI systems (Guerra-Tamez et al., 2024).

Significant differences exist in how various age groups adopt and trust AI-generated outputs. While younger digital natives are generally more accustomed to utilising digital tools in daily life, they frequently maintain considerable caution regarding data privacy and the ethical dimensions of automation. Conversely, older cohorts often encounter usability barriers and demonstrate a stronger preference for human-assisted alternatives over fully automated processes (Baham et al., 2025). This suggests that the Algorithm Discount discussed in preceding sections is not a uniform phenomenon but varies in intensity according to the age and technological familiarity of the consumer.

This generational divide is further explained by the tension between the machine heuristic and perceived eeriness. Some consumers respond positively to the disclosure of AI involvement because they associate machine production with greater objectivity and precision – a cognitive tendency described as the machine heuristic. Others, however, find AI involvement in creative or sensory products unsettling, and this perceived eeriness negatively affects brand appreciation and purchase intention (Wu and Wen, 2021). Whether a consumer perceives the AI origin of Nano-Fizz as a mark of modern precision or an unsettling displacement of human tradition is therefore largely a function of prior technological exposure.

It should be noted that demographic analysis in this study is treated as exploratory rather than hypothesis-driven. While age is incorporated as a survey variable to identify potential patterns in the Algorithm Discount across consumer segments, the formal hypotheses H1 and H2 are concerned with the economic and psychological mechanisms of AI disclosure rather than with demographic predictors. Any demographic findings will therefore be reported descriptively in the practical section and interpreted in light of the theoretical framework established in this chapter.

3.6 Gaps in the research

Despite the rapid integration of artificial intelligence into the food and beverage industry, the existing academic literature exhibits several notable limitations that this thesis aims to address. The first concerns the empirical nature of the research subjects used in prior studies. Much of the current literature on consumer willingness to pay for AI-designed products relies on hypothetical scenarios or fictional goods evaluated in controlled laboratory settings, producing findings that may not fully reflect real-world consumer behaviour. By employing Nano-Fizz – a real, commercially available beverage – this study moves beyond the constraints of hypothetical product evaluation, providing a more ecologically valid reflection of how consumers assign economic value to tangible AI-generated products (Zhang et al., 2022; Xu and Mehta, 2022).

A second limitation relates to a sector-specific absence of research in the beverage industry. Current literature on AI perception and consumer valuation focuses predominantly on visual or utilitarian categories such as luxury fashion, digital art, and logistics. While existing studies document the rise of AI in winemaking from a production and efficiency standpoint (Chirita and Chirita, 2023; IWSR, 2024), there is a lack of data addressing how the disclosure of AI involvement specifically impacts consumer economic valuation in a sensory-driven market. This research addresses that gap by shifting the analytical focus from the production economics of AI to the consumer psychology of trust and perceived value.

A third and methodological gap concerns the comparison between sensory experience and cognitive disclosure. No existing study has specifically measured the variance in willingness to pay between a sensory-only evaluation and an informed evaluation of the same physical beverage product. The sequential disclosure methodology employed in this study – first measuring WTP through blind tasting, then measuring it again following AI disclosure – directly addresses this gap. Furthermore, by situating the research within the Central

European market, where beverage tradition carries significant cultural weight and where consumer attitudes toward AI remain understudied, this thesis provides a geographically distinct perspective on whether positive sensory experience can meaningfully offset the algorithm discount identified in the broader literature (Kahneman and Tversky, 1979; Zhang et al., 2022).

4 Practical Part

4.1 Research Context and Product Description

The practical component of this research was conducted in Prague between 04.03.2026 – 09.03.2026. The study employed Katlenburger's Nano-Fizz as its empirical subject – selected on the basis of its status as Europe's first commercially available AI-generated fruit wine and its direct relevance to the theoretical framework established in Chapter 3 (Katlenburger GmbH, 2024). Participants were recruited from university students across Prague, representing the digital native demographic identified in section 3.5 as most relevant to the research question.



Picture 1. Katlenburger Nano-Fizz. Source: katlenburger.com

4.2 Data Collection Procedure

4.2.1 Experimental Design: Sequential disclosure

The study utilises a sequential disclosure experiment, designed to isolate the psychological impact of the AI label from the sensory experience. The experiment was conducted in a controlled setting with groups of no more than five participants to minimise social influence and ensure data quality.

- Stage 1 - Blind Sensory Evaluation

Participants were provided with a chilled 50ml sample of the product at approximately 8°C in standardised, unbranded plastic cups. At this stage, respondents had no information

regarding the brand or the production method. They were asked to evaluate the flavour profile and state their initial Willingness to Pay based solely on the physical experience of the drink.

- The Disclosure Transition

Immediately following the blind evaluation, a standardised script was read aloud to the group: "The drink you have just tasted is Nano-Fizz, Europe's first beverage designed by Artificial Intelligence. While human winemakers oversaw the final quality, the recipe, name, and design were generated by an algorithm."

- Stage 2 - Informed Evaluation

Following the disclosure, participants were presented with the branded bottle. They were then asked to re-evaluate their Willingness to Pay and provide feedback on their perception of the product's authenticity and their perception of the human effort involved in its creation.

4.2.2 Standardised Conditions

To ensure the reliability of the results, the following controls were implemented:

- Visual Controls: All original branding was concealed during Stage 1.
- Environmental Controls: Consistent lighting, room temperature, and the absence of strong external odours were maintained throughout the experiment.
- Preparation: Samples were poured immediately before consumption to maintain carbonation and temperature consistency across all participants.



Picture 2. Blind tasting session, Prague, March 2026. Source: Own research, 2026

4.3 Sample Description

A total of 30 participants took part in the tasting experiment, recruited from university students across Prague between 5 and 9 March 2026. As illustrated in Figure 1, the majority of respondents (67%) fell within the 18–24 age bracket, corresponding to Generation Z (born 1997–2012), with 30% aged 25–34, representing Millennials (born 1981–1996), and one respondent aged 55 or above. This age distribution is consistent with the digital native demographic identified in section 3.5 as most theoretically relevant to the research question.

What is your age?

30 ОТВЕТОВ

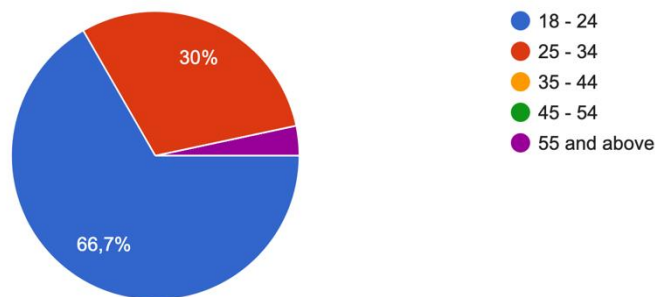


Figure 1. Age Distribution. Source: Own research, 2026

In terms of gender, 53% of respondents identified as male, 43% as female, and one participant preferred not to disclose their gender, as shown in Figure 2.

What is your gender?

30 ОТВЕТОВ

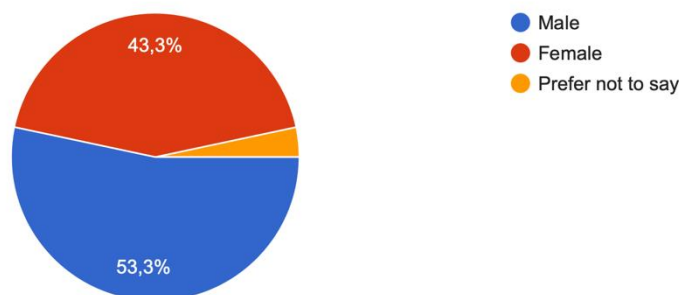


Figure 2. Gender Distribution. Source: Own research, 2026

Income distribution, presented in Figure 3, revealed that the overwhelming majority of respondents (73 %) reported a monthly income of 20,000–30,000 CZK, consistent with the

expected financial profile of full-time students in Prague. A smaller proportion reported incomes above 40,000 CZK, likely reflecting part-time employment alongside studies.

What is your monthly income?

30 ответов

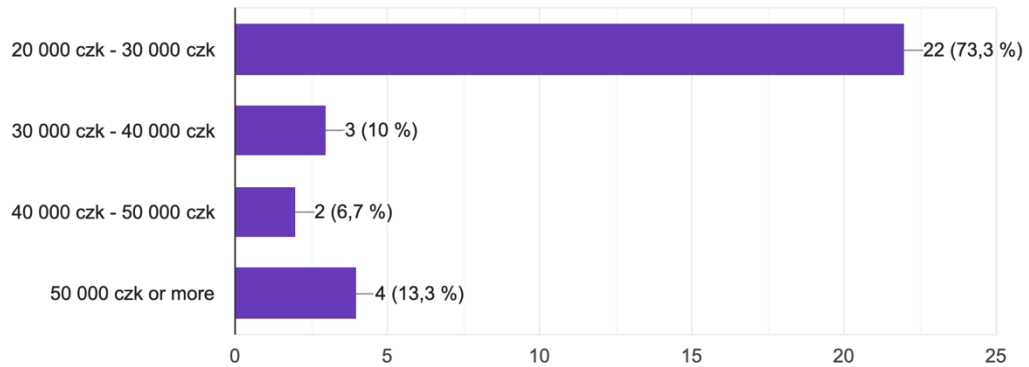


Figure 3. Income Distribution. Source: Own research, 2026

Regarding AI familiarity, 50 % of respondents described themselves as slightly familiar with AI-designed products, having heard of them but not used one. A further 33 % reported no familiarity at all, while only 17% had moderate or high familiarity. This distribution confirms that the sample is largely representative of consumers without prior exposure to AI-generated products, making their reactions to the disclosure particularly meaningful.

How familiar are you with AI-designed or AI-generated products in general?

30 ответов

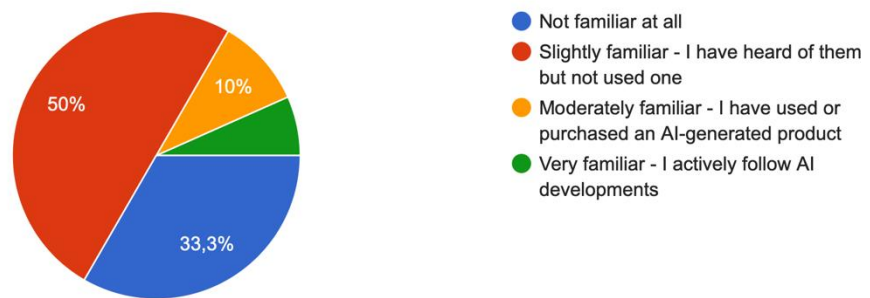


Figure 4. AI-familiarity of Respondents. Source: Own research, 2026

4.4 Descriptive Statistics

4.4.1 Blind Taste Evaluation – Stage 1

Prior to any disclosure of the product's origin, participants evaluated Nano-Fizz based solely on sensory experience. As shown in Figure 5, the overwhelming majority responded positively: 57% rated the beverage as Good and 33% as Excellent, yielding a combined favourable rating of 90%. Only one respondent rated the beverage as Very Poor, and two rated it Average.

How would you rate the taste of this beverage?

30 ответов

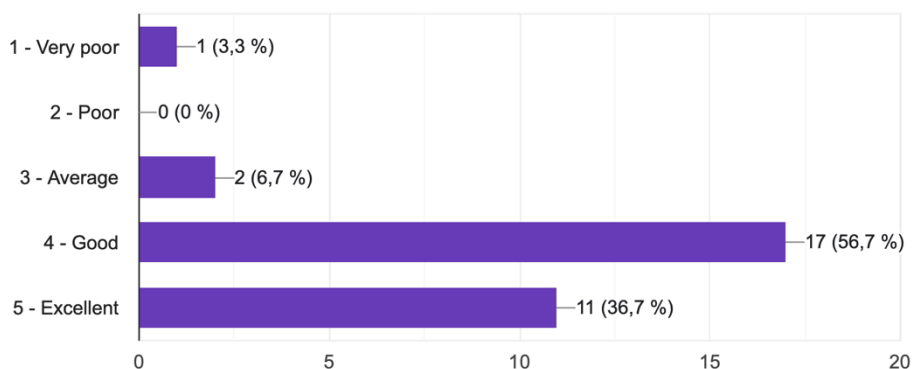


Figure 5. Blind Taste Ratings. Source: Own research, 2026

The mean Willingness to Pay at Stage 1, calculated using the midpoint of each selected price bracket, was 114,65 CZK, with a standard deviation of 54,24 CZK. This figure is consistent with the reference anchor provided to participants (comparable RTD beverages retail between 40 and 120 CZK), suggesting that the blind sensory experience led most respondents to value the product at or above the upper end of the market reference range.

4.4.2 Post-Disclosure Evaluation - Stage 2

Following the disclosure of AI involvement, the mean Willingness to Pay decreased to 107.70 CZK, representing a nominal reduction of 6.95 CZK, or 6.1%, as illustrated in Figures 6 and 7.

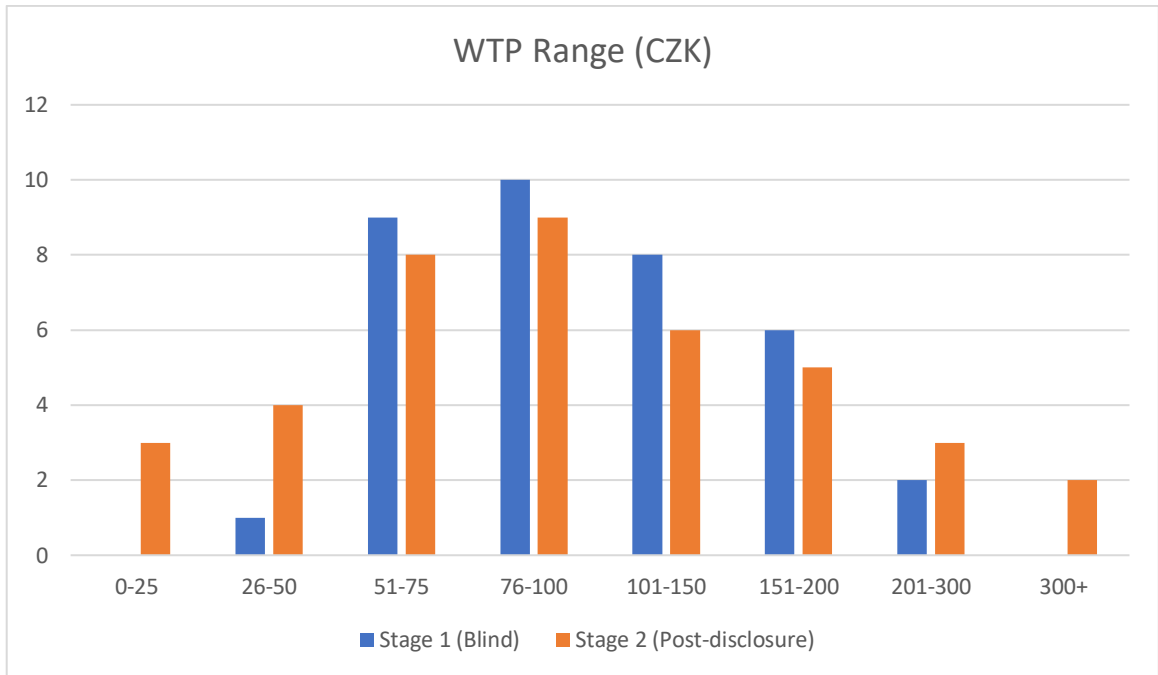


Figure 6. WTP Distribution Before and After AI Disclosure (n=30). Source: Own research, 2026

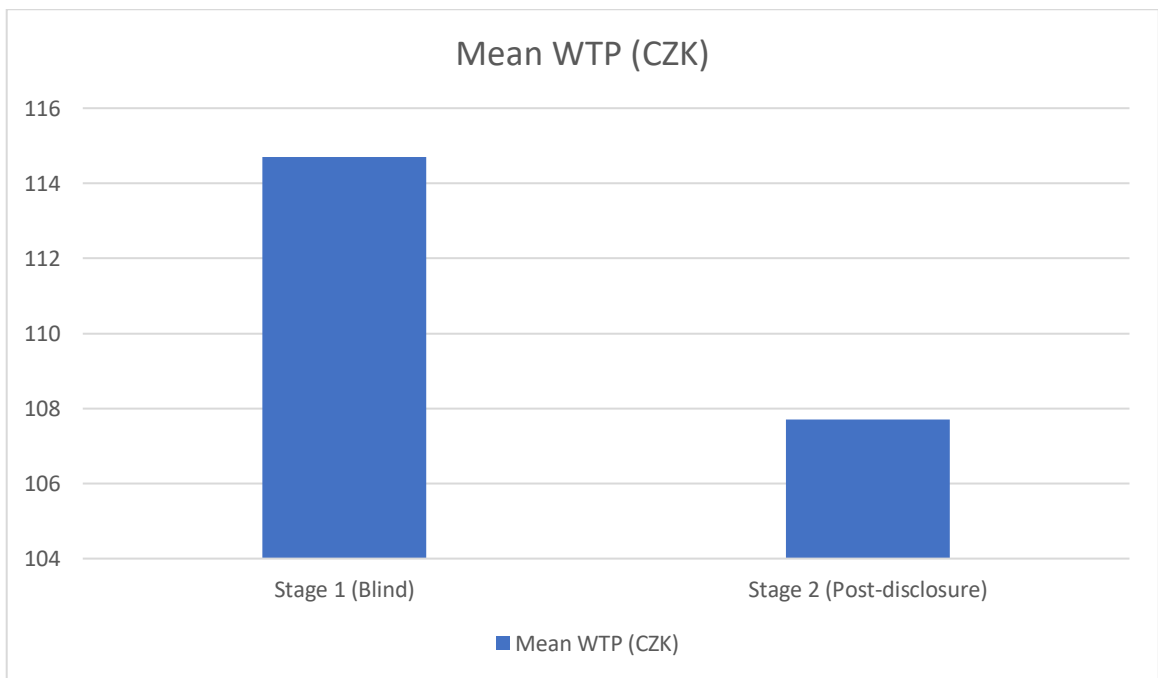


Figure 7. Mean WTP Before and After Disclosure Source: Own research, 2026

Of the 30 participants, 10 decreased their WTP following disclosure, 3 increased it, and 17 reported no change. The largest individual decrease was 120 CZK, while the largest increase was 200 CZK - the latter respondent explicitly citing the novelty and sophistication of AI design as their justification.

Regarding trust in AI-assisted beverage quality, 50% of respondents selected Moderately, 23% Considerably, and 10% Completely, indicating a broadly cautious but not hostile reception. Only 13% expressed low or no trust.

4.5 Hypothesis Testing

- H1 – Paired samples T-test

H1 states that AI disclosure results in a statistically significant decrease in Willingness to Pay among the surveyed sample of respondents.

Prior to conducting the Paired Samples T-Test, the normality of the WTP difference scores was assessed using the Shapiro-Wilk test. The result ($W = 0.743$, $p < 0.001$) indicated a significant departure from normality, violating the parametric assumption. In accordance with the data quality controls established in section 2.2.3, the Wilcoxon Signed-Rank Test was therefore applied as the non-parametric alternative.

The Wilcoxon Signed-Rank Test yielded a test statistic of $W = 29.5$ and a p-value of 0.148. As this exceeds the significance threshold of $p < 0.05$, H1 is rejected. The observed decrease in mean WTP of 6.95 CZK cannot be attributed to AI disclosure with statistical confidence at this sample size.

Test	Statistic	p-value	Result
Shapiro-Wilk (normality)	$W = 0.743$	$p < 0.001$	Non-normal, Wilcoxon applied
Wilcoxon Signed- Rank	$W = 29.5$	$p = 0.148$	Not significant

Table 1. H1 Statistical Results. Source: Own research, 2026

This result does not mean the Algorithm Discount is absent. Rather, it suggests that within this sample, the strong positive sensory experience established in Stage 1 - where 90% rated the taste as Good or Excellent - may have acted as a psychological buffer that partially offset the negative cognitive response to AI disclosure. This interpretation is consistent with the hybrid model discussed in section 3.3.1, where human oversight and product quality sustain consumer confidence despite algorithmic origin.

- H2 – Thematic Coding

H2 states that the reduction in WTP following AI disclosure is primarily driven by the Effort Heuristic - the perceived absence of human labour rather than any objective deficiency in product quality.

Open-ended responses to Question 7 were analysed using the deductive thematic coding framework established in section 3.4, with three predetermined categories: (1) references to perceived effort or absence of human labour, (2) references to authenticity or tradition, and (3) references to technological innovation or precision. Responses that indicated no price change were coded separately. Two reviewers independently coded the responses and reached full agreement, yielding a Cohen's Kappa of $\kappa = 1.0$.

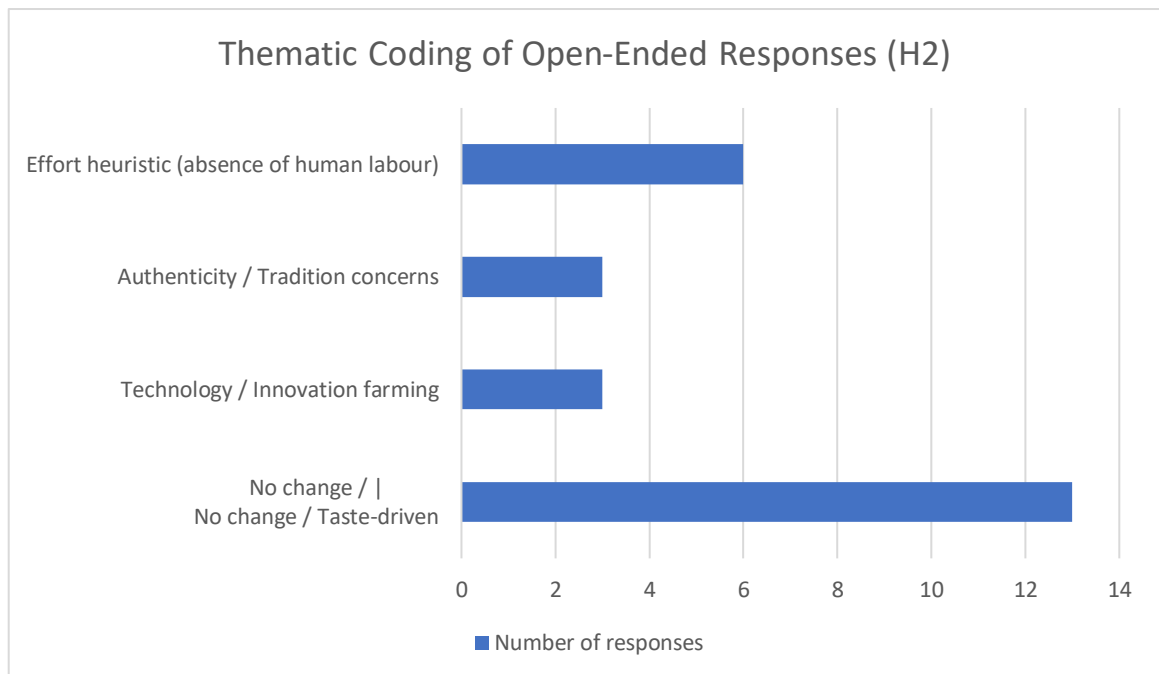


Table 2. Thematic Coding Results. Source: Own research, 2026

Of the 25 codeable responses, 6 (24%) were coded under the Effort Heuristic category, 3 (12%) under Authenticity and Tradition, 3 (12%) under Technology and Innovation framing, and 13 (52%) indicated no change with taste-driven reasoning. Among respondents who lowered their WTP, the Effort Heuristic was the dominant explanatory category. Representative responses included:

- "Because I feel like it didn't get as much effort as beverages made by humans."
- "Less people got paid to develop it so the price should be lower."
- "I feel with no human creativity it should be less."

- "Because I believe humans require more pay than AI and people who write recipes should be paid more than an AI."

Conversely, respondents who maintained or increased their WTP cited taste quality as determinative:

- "My valuation did not change because the quality and taste of the wine are more important to me than whether the description was created by AI or a human."
- "Actually, it didn't change. The taste is still good enough."

H2 is partially confirmed. Among respondents who did change their price, the Effort Heuristic - defined as devaluation based on perceived absence of human labour rather than sensory deficiency - was the most frequently cited reason. However, the majority of respondents did not change their price at all, indicating that for this sample the sensory experience overrode the Effort Heuristic in a significant proportion of cases.

5 Results and Discussion

Taken together, the two hypotheses yield a consistent picture. The absence of a statistically significant Algorithm Discount in H1 and the partial confirmation of the Effort Heuristic in H2 together suggest that sensory experience plays a moderating role in AI disclosure effects. When consumers encounter an AI-designed product through direct physical tasting rather than through packaging or marketing alone, the quality of the sensory experience becomes the dominant reference point - partially displacing the cognitive bias against algorithmic origin predicted by Kahneman and Tversky (1979). This finding has direct implications for how AI-designed beverage products should be brought to market. Rather than leading with the technological narrative, producers may benefit from prioritising taste-first consumer encounters, allowing the product to establish its sensory credibility before AI involvement is disclosed.

The demographic profile of the sample - predominantly Generation Z students aged 18–24 to with low AI familiarity - further contextualises these findings. Despite belonging to the digital native generation theorised in section 3.5 to be more receptive to technological innovation, the majority of respondents exhibited cautious rather than enthusiastic reactions to the AI disclosure. This suggests that generational openness to AI does not automatically translate into willingness to pay a premium for AI-designed consumables, particularly in hedonic product categories where tradition and human craft carry symbolic weight.

These results partially challenge the predictions of Zhang et al. (2022) and Xu and Mehta (2022), who documented stronger Algorithm Discounts in hedonic product contexts. A plausible explanation for this divergence is the exceptionally positive blind taste evaluation - 90% favourable - which may have created a stronger sensory anchor than was present in the hypothetical product evaluations used in prior studies. This methodological distinction underlines the value of using a real, commercially available product in an ecologically valid tasting setting, as established in section 3.6 as a key contribution of this research.

6 Conclusion

This thesis set out to investigate how the disclosure of AI involvement in product design affects consumer Willingness to Pay, using Katlenburger's Nano-Fizz as a real-world empirical case study. By employing a sequential disclosure experiment with 30 university students across Prague, the study sought to measure the economic impact of AI transparency in the hedonic beverage category and to identify the psychological mechanisms driving any observed price changes.

With respect to H1, the study found that the mean Willingness to Pay decreased from 114.65 CZK to 107.70 CZK following the disclosure of AI origin - a nominal reduction of 6.95 CZK, or 6.1%. However, this decrease was not statistically significant, as confirmed by the Wilcoxon Signed-Rank Test ($W = 29.5$, $p = 0.148$). H1 is therefore rejected. The Algorithm Discount predicted by the theoretical framework was present in direction but not in magnitude sufficient to reach statistical significance within this sample. The most plausible explanation is that the exceptionally positive blind taste evaluation - with 90% of participants rating the beverage as Good or Excellent - created a strong sensory reference point that partially neutralised the negative cognitive impact of AI disclosure.

With respect to H2, thematic coding of open-ended responses revealed that among respondents who did lower their WTP, the Effort Heuristic was the dominant explanatory mechanism. Participants consistently cited the perceived absence of human labour, creativity, and expertise as their justification for valuing the product less after disclosure. H2 is therefore partially confirmed. However, the majority of respondents did not change their price at all, indicating that the sensory experience of a high-quality product can override the Effort Heuristic for a significant proportion of consumers.

Taken together, these findings carry practical implications for the beverage industry. Producers of AI-designed products should consider prioritising taste-first consumer encounters over technology-led marketing narratives. When a product demonstrates strong sensory quality before its algorithmic origin is disclosed, the economic penalty of AI transparency is substantially reduced. The hybrid model - positioning human winemakers as the final arbiters of quality - also appears to be an effective strategy for sustaining consumer confidence, as reflected in the broadly moderate trust ratings observed in this study.

This research is subject to several limitations. The sample size of 30 participants, while sufficient for the exploratory objectives of a bachelor thesis, limits the statistical power of

the Wilcoxon test and reduces the generalisability of the findings. The sample was also demographically homogeneous, consisting predominantly of 18–24 year old students in Prague, which may not reflect the broader Czech or European consumer population. Future research should replicate this sequential disclosure methodology with larger and more demographically diverse samples, and should consider extending the comparison across multiple AI-designed products and beverage categories to test whether the sensory buffer effect observed here is consistent or product-specific.

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Appendix

Survey Questionnaire: Wine Tasting Experiment.

- Stage 1 - Blind Evaluation

Q1: How would you rate the taste of this beverage?

Q2: What three words would you use to describe this beverage?

Q3: Based solely on the taste you just experienced, what is the maximum price you would be willing to pay for one 330ml bottle?

Q4: If this beverage were available in a shop at your stated price, how likely would you be to purchase it?

- Stage 2 - Post-Disclosure Evaluation

Q5: Now that you know the origin of this product, what is the maximum price you would be willing to pay for one 330ml bottle?

Q6: How much do you trust the quality of a beverage developed with AI assistance?

Q7: If your price valuation changed after learning about the AI origin, what was the primary reason for that change?

Q8: To what extent do you agree with the following statement: "A beverage designed by AI feels less authentic than one created by a human winemaker."

Q9: Which of the following best describes your reaction to learning this beverage was AI-assisted?

- Demographics

Q10: What is your age?

Q11: What is your gender?

Q12: What is your monthly income?

Q13: How often do you consume wine or ready-to-drink beverages?

Q14: How familiar are you with AI-designed or AI-generated products in general?