



FELIPE FURTINI HADDAD

**INFLUÊNCIA DO RÓTULO E EXPERIÊNCIA DE
CONSUMO NA PREFERÊNCIA, PERCEPÇÃO E
PROCESSO DE COMPRA DE CERVEJAS ESPECIAIS**

**LAVRAS-MG
2022**

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PREFERÊNCIA, PERCEPÇÃO E PROCESSO DE COMPRA DE CERVEJAS
ESPECIAIS**

Tese apresentada à Universidade Federal de Lavras, como parte das exigências do Programa de Pós-Graduação em Ciência dos Alimentos, para a obtenção do título de Doutor.

Prof. Dr. João de Deus Souza Carneiro
Orientador

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**INFLUENCE OF LABEL AND CONSUMPTION EXPERIENCE ON THE
PREFERENCE, PERCEPTION AND PURCHASING PROCESS OF SPECIAL
BEERS**

Tese apresentada à Universidade Federal de Lavras, como parte das exigências do Programa de Pós-Graduação em Ciência dos Alimentos, para a obtenção do título de Doutor.

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*Ao meu Pai, Hélio, e minha Mãe, Sonia, por
me ensinarem os reais valores da vida.*

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no decorrer desta jornada.*

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RESUMO GERAL

O mercado de cervejas artesanais, também chamadas de cervejas especiais, apresenta elevado crescimento no Brasil, tanto em produção quanto em consumo, evidenciando-se a importância de pesquisas envolvendo produtores e consumidores de cervejas artesanais. Diante disso, o estudo teve como objetivos (i) identificar, junto a produtores da indústria cervejeira, suas percepções quanto ao comportamento dos consumidores de cervejas artesanais e analisar o comportamento de diferentes categorias de consumidores de cervejas artesanais em relação às suas preferências, percepções e fatores que influenciam no processo de compra (artigo 1); (ii) identificar o perfil e avaliar a percepção, conhecimento e fatores que influenciam na intenção de compra de consumidores iniciantes e consumidores experientes de cerveja artesanal (artigo 2). Para tanto, foram realizadas entrevistas com 14 produtores de cerveja artesanal e aplicação de questionário online a 301 consumidores de cerveja artesanal (artigo 1), além de realização de pesquisa mercado e análise conjunta de fatores (avaliando a influência dos fatores IBU (*International Bitternes Units*), teor alcoólico e selos de premiação na intenção de compra) com 148 consumidores iniciantes e 143 consumidores experientes de cerveja artesanal (artigo 2). Os dados obtidos foram analisados por meio de análises qualitativas e quantitativas com uso dos softwares IBM® SPSS® Statistics 28.0.1, SAS/STAT® e Microsoft® Excel®. Os resultados do artigo 1 demonstraram convergência nas percepções dos produtores da indústria cervejeira em relação ao comportamento dos consumidores de cervejas artesanais, sendo que teor alcoólico, IBU e selos de premiação foram apontados como fatores determinantes no momento da compra de cerveja artesanal. Além disso, a análise de cluster permitiu identificar três segmentos de consumidores de cerveja artesanal: iniciantes no universo de cervejas artesanais que também bebem cervejas comerciais; consumidores regulares dispostos a pagar mais por cervejas especiais; e consumidores legítimos de cervejas especiais avessos à cerveja comercial. Em relação à experiência de consumo (artigo 2), consumidores iniciantes (que realizam consumo de cerveja artesanal há menos de 5 anos) e experientes (há mais de 5 anos) apresentaram diferença no perfil socioeconômico (gênero, faixa etária, renda e escolaridade) e na frequência de consumo. Os consumidores iniciantes de cerveja artesanal mostraram não conhecer profundamente o atributo IBU, enquanto consumidores experientes não consideram 50 IBU e 7,0% de teor alcoólico como valores altos para cervejas artesanais. Finalmente, na análise conjunta de fatores, ambos os grupos de consumidores atribuíram maior importância relativa para o fator teor alcoólico, sendo a cerveja sem álcool a de menor intenção de compra, acompanhada de cervejas com 10 IBU e sem selo de premiação, enquanto cervejas com 30 IBU e 4,5% de teor alcoólico apresentaram maior intenção de compra. Os resultados obtidos podem contribuir de forma teórica, para pesquisas acadêmicas, e gerencial para indústrias produtoras de cerveja no direcionamento de desenvolvimento de novos produtos e na definição de estratégias de marketing adequadas para diferentes segmentos de consumidores.

Palavras-chave: Cerveja especial. Cerveja tradicional. Cevada. Lúpulo. Comportamento do Consumidor. Pesquisa de Mercado. Intenção de Compra. Análise conjunta.

GENERAL ABSTRACT

The craft beer market, also called special beers, presents a high growth in Brazil, both in production and consumption, highlighting the importance of research involving producers and consumers of craft beers. In view of this, the study had the following objectives (i) to identify, together with brewery industry producers, their perceptions regarding craft beer consumers behavior and analyze the behavior of different categories of craft beer consumers in relation to their preferences, perceptions and factors influencing the purchasing process (article 1); (ii) to identify the profile and evaluate the perception, knowledge and factors influencing the purchase intention of beginners and experienced craft beer consumers (article 2). To this end, interviews were conducted with 14 craft beer producers and an online questionnaire was applied to 301 craft beer consumers (article 1), and market research and conjoint analysis (assessing the influence of IBU (International Bitterness Units), alcohol content, and award seals on purchase intention) was conducted with 148 beginner and 143 experienced craft beer consumers (article 2). The data obtained were analyzed by qualitative and quantitative analyses using IBM® SPSS® Statistics 28.0.1, SAS/STAT® and Microsoft® Excel® software. The results of article 1 showed convergence in the beer producers perceptions regarding the craft beer consumers behavior, with alcohol content, IBU, and award seals being pointed out as determining factors when purchasing a craft beer. Moreover, the cluster analysis allowed the identification of three segments of craft beer consumers: beginners in the craft beer universe who also drink commercial beers; regular consumers willing to pay more for special beers; and legitimate consumers of special beers averse to commercial beer. In relation to consumption experience (article 2), beginner consumers (who have been consuming craft beer for less than 5 years) and experienced consumers (for more than 5 years) showed differences in socioeconomic profile (gender, age group, income, and education) and frequency of consumption. Beginner craft beer consumers showed no deep knowledge of the IBU attribute, while experienced consumers do not consider 50 IBU and 7.0% alcohol content as high values for craft beers. Finally, in the conjoint analysis, both consumer groups attributed greater relative importance to the alcohol content factor, with non-alcoholic beer having the lowest purchase intention, accompanied by beers with 10 IBU and no award seal, while beers with 30 IBU and 4.5% alcohol content had the highest purchase intention. The results obtained can contribute in a theoretical way, for academic research, and in a managerial way for beer producing industries in directing the development of new products and in defining appropriate marketing strategies for different consumer segments.

Keywords: Special beer. Traditional beer. Barley. Hops. Consumer behavior. Market research. Purchase intention. Conjoint analysis.

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PRIMEIRA PARTE

1 INTRODUÇÃO

A cerveja, obtida por meio de fermentação do mosto cervejeiro contendo principalmente água, malte de cevada, lúpulo e levedura, é uma das bebidas alcoólicas mais antigas e mais consumidas em todo o mundo, com origens que remontam a mais de nove mil anos (GALLONE *et al.*, 2016; HAYWARD; WEDEL; McSWEENEY, 2019; HUMIA *et al.*, 2020).

A produção e o consumo de cerveja tornaram-se difusos e populares, sendo a terceira bebida em geral mais consumida depois da água e do chá (MELEWAR; SKINNER, 2020) e, entre as bebidas alcoólicas, a mais consumida em todo o mundo (GÓMEZ-CORONA *et al.*, 2016; VILLACRECES; BLANCO; CABALLERO, 2022). Diante desse alto consumo, considerando o tamanho do mercado e o número de cervejarias que surgiram recentemente em todo o mundo (BETANCUR *et al.*, 2020), a cerveja tem sido foco de inúmeros estudos (CALVO-PORRAL; OROSA-GONZÁLEZ; BLAZQUEZ-LOZANO, 2018; ZANETTA *et al.*, 2021).

O mercado mundial de cerveja sempre foi dominado por cervejarias tradicionais e produção em alta escala, tendo como produto a cerveja comercial que apresenta características de leveza, simplicidade e economia. Porém, principalmente nos últimos anos, aspectos relacionados a ingredientes, produção e consumo apresentaram modificação, tendo as cervejas artesanais, ou especiais, ganhado destaque por apresentarem sabores e aromas específicos, ingredientes diferenciados e novos estilos.

Enquanto os consumidores de cervejas comerciais normalmente se atentam para a industrialização, alta produção e preço, consumidores de cervejas artesanais deixam sua atenção no sabor, processo produtivo, ingredientes da bebida e rótulo do produto. Em particular, o aumento da popularidade deste segmento de cerveja se beneficiou de inovação, criatividade, tipicidade e autenticidade que caracterizam a cerveja artesanal como uma experiência que oferece prazer, gozo, senso de identidade e de pertencimento, reconhecimento social e sustentabilidade (DONADINI; PORRETTA, 2017; WILLIANS; BARRETTA, 2018).

O consumidor de cerveja artesanal muitas vezes realiza o processo de compra do produto com base em atributos extrínsecos (como marca, preço, teor alcoólico, design da embalagem, ilustrações, origem, tipo e tecnologia de produção, que são informações contidas no rótulo e na própria embalagem) e atributos intrínsecos (como cor, aroma, amargor (IBU),

gaseificação). A informação fornecida sobre o produto tem papel fundamental na escolha e compra dos consumidores, sendo que na maioria das situações de compra, os consumidores tomam suas decisões usando informações sobre a marca e informações contidas no rótulo (DELLA LUCIA *et al.*, 2010; JAEGER *et al.*, 2021; MEYERDING; BAUCHROWITZ; LEHBERGER, 2019; PAULA *et al.*, 2021; THONG *et al.*, 2018).

A tendência de demanda em favor da cerveja artesanal tornou-se bem consolidada, uma vez que a chamada “atividade de produção e consumo artesanais” ganhou espaço ao redor do mundo (CARBONE; QUICI, 2020). Assim, muitas cervejarias têm ampliado seu portfólio de produção (PARKER *et al.*, 2020), e conhecer os diferentes consumidores de seus diferentes produtos pode ser essencial para uma correta segmentação de mercado. Variáveis baseadas no consumidor podem ser utilizadas para diferenciar segmentos de consumidores (CALVO-PORRAL; OROSA-GONZÁLEZ; BLAZQUEZ-LOZANO, 2018; CARDELLO *et al.*, 2016) e, com isso, cervejarias podem destinar seus produtos para diferentes categorias de consumidores de cervejas especiais. Porém, os produtores de cervejas especiais realmente conhecem os consumidores de seus produtos e suas preferências em relação às cervejas artesanais?

Nos últimos anos, o comportamento do consumidor em relação ao consumo de cerveja mudou em diferentes países (CARVALHO *et al.*, 2018; ZANETTA *et al.*, 2021). Pesquisas demonstram que consumidores de cerveja artesanal buscam por uma grande variedade de estilos e sabores de cerveja, e que isso vem sendo um impulsionador de seu consumo. Porém, diferentes grupos de consumidores apresentam comportamentos distintos no que tange ao perfil, dados socioeconômicos e características de consumo (AQUILANI *et al.*, 2015; GÓMEZ-CORONA *et al.*, 2016, 2017; JAEGER *et al.*, 2020). Diante deste contexto, a experiência de consumo torna-se uma variável na diferenciação de grupos de consumidores de cerveja artesanal com base no tempo em que realizam o consumo do produto. Consumidores iniciantes de cerveja artesanal têm o mesmo comportamento de consumidores experientes que realizam o consumo há mais tempo?

Assim, tem-se a necessidade da realização de estudos abrangendo produtores e consumidores de cerveja devido ao constante crescimento de produção e consumo de cervejas artesanais. É importante investigar as percepções dos profissionais cervejeiros a respeito dos consumidores e o real comportamento desses consumidores para agregar conhecimento à cadeia de mercado cervejeiro. Além disso, torna-se importante identificar diferentes grupos de consumidores de cerveja com base em perfil socioeconômico, características de consumo,

conhecimento, percepção e fatores que influenciam a intenção de compra de cervejas artesanais.

Estudos envolvendo produtores e consumidores são capazes de gerar informações e conhecimentos científicos que podem auxiliar a indústria cervejeira no desenvolvimento de novos produtos de acordo com o público consumidor específico, modificando rótulos/embalagens e definindo estratégias de marketing, bem como criando estratégias para aproximar produtores e consumidores em benefício de ambas as partes.

Diante disso, o trabalho teve como objetivo a) identificar, junto aos produtores da indústria cervejeira, suas percepções quanto ao comportamento dos consumidores de cervejas artesanais; b) analisar o comportamento de diferentes categorias de consumidores de cervejas artesanais e identificar o perfil, preferências, percepções e fatores que influenciam na compra desses consumidores; c) identificar o perfil e características de consumo de consumidores iniciantes e consumidores experientes de cerveja artesanal; d) avaliar a percepção e conhecimento de consumidores iniciantes e consumidores experientes de cerveja artesanal em relação ao teor alcoólico, IBU e selos de premiação; e) avaliar e quantificar o efeito de atributos do rótulo de cervejas artesanais (IBU, teor alcoólico e selos de premiação) na intenção de compra de consumidores iniciantes e consumidores experientes de cerveja artesanal, utilizando análise conjunta de fatores.

2 REFERENCIAL TEÓRICO

2.1 História da cerveja

Diante de um consumo amplo e generalizado, a cerveja é a bebida alcoólica mais consumida no mundo e a terceira bebida em geral. Nos tempos antigos, a cerveja era amplamente utilizada na nutrição humana, em práticas religiosas e também para tratamento de doenças. Atualmente, existem muitos estilos e tipos de cerveja, dependendo do processo de fabricação e dos ingredientes utilizados (HUMIA *et al.*, 2019).

A história da cerveja está ligada à história da agricultura. Pelo fato de seus ingredientes básicos serem os mesmos do pão, na Antiguidade a cerveja era conhecida como "pão líquido". A cerveja foi desenvolvida paralelamente aos processos de fermentação de cereais, e sua produção era uma atividade realizada por mulheres (CARVALHO; BENTO; ALMEIDA e SILVA, 2006).

Os primeiros campos de cultura de cereais surgiram na Ásia Ocidental por volta de 9.000 a.C. Os agricultores primitivos colhiam os grãos e os transformavam em farinha, surgindo assim uma lenda de que a fixação do homem se deu pela necessidade de se produzir pão e cerveja. Muitos indícios demonstram que à época em que o homem começou a construir cidades, por volta de 6.000 anos a.C., a fabricação de cerveja já era uma atividade bem estabelecida e aparentemente organizada (MORADO, 2011).

Antes de se iniciar a escrita, desenhos rupestres e símbolos primitivos que remetem à produção de uma bebida semelhante à cerveja foram registrados. Os documentos mais antigos já encontrados, por volta de 6.000 anos a.C., estão repletos de símbolos da cerveja como mercadoria e moeda de troca, principalmente em cidades dos povos da Suméria, Babilônia e Egito (CARVALHO, 2019).

Conforme descrito por Nardi (2018), a cerveja foi criada através de um erro de produção em que se descobriu um processo de fermentação de cereais, dando origem às primeiras bebidas alcoólicas similares à cerveja. Na antiga Mesopotâmia, nos povos sumérios, os responsáveis pela fabricação primitiva de cerveja foram os padeiros, pois estes eram os responsáveis por trabalhar com ingredientes como a cevada.

Já Beltramelli (2012) descreve que, na antiguidade, o homem era responsável pela caça enquanto as mulheres colhiam cereais no campo para fazer pão. Acidentalmente, um recipiente com grãos de cevada foi esquecido ao tempo e, em contato com a água da chuva,

ocorreu a germinação dos grãos, gerando o processo de malteação da cevada e, conseqüentemente, após aquecimento deste líquido, a cerveja primitiva foi elaborada.

No período medieval, além de ser uma necessidade nutricional, a cerveja era, às vezes, usada como remédio. Adiante, as primeiras iniciativas de produção em maior escala aconteceram nos mosteiros, a partir do século VI. Numa época de sociedade iletrada, os mosteiros eram locais de conhecimento, desenvolvimento de técnicas e com capacidade de registrar as receitas e os acontecimentos que serviram para construir sua história (MORADO, 2011).

No fim da idade média, os cervejeiros de origem germânica foram os primeiros a incrementar o lúpulo à cerveja, o que conferiu à bebida as características básicas da cerveja atualmente conhecida e produzida. No início do século XVI, em 1516, um fato marcante no mundo da cerveja ocorreu com a criação da Lei Alemã da Pureza – *Reinheitsgebot* – determinando que a cerveja poderia ser elaborada somente com utilização de malte de cevada, lúpulo e água pura (BELTRAMELLI, 2012). Este fato se tornou fundamental para a atual diferenciação entre cervejas comerciais e cervejas especiais.

De acordo com Cruz (2007), a produção de cerveja alterou-se decisivamente no século XIX, uma vez que métodos e conceitos científicos foram adotados pelos fabricantes da época, substituindo o modo empírico com que se prevaleceu durante muitos séculos na produção pelo mundo. Diante disso, passou-se a obter uma cerveja com maior durabilidade, mais reprodutível e de qualidade mais consistente. Como resultado, as unidades produtoras foram se tornando cada vez maiores, fazendo com que se originasse a verdadeira indústria cervejeira.

Em relação ao Brasil, presume-se que a cerveja chegou ao país com a colonização holandesa no século XVII através da Companhia das Índias Ocidentais. Porém, quando os holandeses se retiraram do país, a cerveja ficou esquecida, destacando-se a retomada em seu consumo somente no final do século XVIII (MADEIRA, 2015).

Com a vinda da família real portuguesa ao Brasil, em 1808, há relatos de que Dom João VI, apreciador da bebida, teria trazido ao país tonéis de cerveja em suas embarcações. Além disso, muitos comerciantes estrangeiros, principalmente ingleses, instalaram-se no Brasil e fizeram vir da Europa, entre outros produtos, a cerveja (SANTOS, 2003).

Até 1880, poucas cervejarias brasileiras já tinham se estabelecido. As bebidas eram de fabricação artesanal e se localizavam nos estados do Rio de Janeiro, São Paulo e Rio Grande do Sul. As cervejarias, de cunho artesanal, tinham um controle bem precário de fermentação e

consequentemente obtinham sempre características e pressões diferentes, sendo as rolhas das garrafas amarradas nas mesmas por barbantes (DANTAS, 2016).

As primeiras indústrias brasileiras de cerveja surgiram na época da Proclamação da República, em 1889. No início do século XX houve aumentos nos impostos de importação, fortalecendo a indústria cervejeira local. Com o aumento do número de cervejarias no Brasil, a cerveja se consolidou como bebida nacional ao passar dos anos (MADEIRA, 2015).

Conforme estudiosos, a importância da cerveja na história e vida humanas vai de um ponto de vista econômico a um nível simbólico e de funcional a um nível experimental (DARPY, 2012; GUINARD *et al.*, 1998; MEJLHOLM; MARTENS, 2006; NIELD; PEACOCK, 1995).

2.2 Ingredientes da cerveja

Há cerca de 5.000 anos a.C. a cerveja vem sendo incluída na dieta humana como um produto fermentado de cereais contendo açúcares e uma variedade de nutrientes importantes como proteínas, vitaminas, minerais e compostos fenólicos. A cerveja consiste em cerca de 90% de água; contém carboidratos e álcool cujos metabolismos no corpo humano seguem a liberação de certa quantidade de energia. O teor alcoólico dos diferentes tipos de cerveja varia e, frequentemente, se situa entre 3,5 e 10% v/v (DE GAETANO *et al.*, 2016).

A cerveja, conforme Instrução Normativa nº 65/2019, é a bebida resultante da fermentação, a partir da levedura cervejeira, do mosto de cevada malteada ou de extrato de malte submetido previamente a um processo de cocção adicionado de lúpulo ou extrato de lúpulo, hipótese em que uma parte da cevada malteada ou do extrato de malte poderá ser substituída parcialmente por adjunto cervejeiro (BRASIL, 2019).

Conforme legislação brasileira, a cerveja apresenta como ingredientes obrigatórios água, malte e lúpulo ou seus extratos, além de ingredientes opcionais como adjuntos cervejeiros e leveduras. Pode ainda conter ingredientes de origem animal, vegetal ou outros ingredientes aptos para o consumo humano e outros microrganismos fermentativos (BRASIL, 2019).

2.2.1 Água

A água, em volume, é o principal constituinte da cerveja, representando cerca de 92% do total. Para cada litro de cerveja produzida são utilizados, em média, 12 litros de água em todo o processo de fabricação (TOZETTO, 2017).

Para a produção de cerveja, a água deve ser livre de impurezas, filtrada, sem cloro, insípida e inodora, inócua, livre de contaminações, servindo de nutriente para as leveduras fermentativas (REBELLO, 2009; VIEIRA, 2009). A água é uma das matérias-primas básicas para a produção de cerveja, e o conhecimento de sua composição e de seu pH é essencial para a condução adequada de todo o processo de fabricação (PUNCOCHAROVA; PORIZKA; DIVIS, 2018).

A água destinada a produção de cerveja deve apresentar características de sais minerais específicas para assegurar um pH desejável na mistura durante a mosturação, fazendo com que as enzimas realizem adequadamente suas funções durante o processo. A maioria das enzimas possui maior atividade em um pH inferior ao do mosto, que geralmente é de 5,8. Assim, a melhor faixa de atuação das amilases e consequente degradação do amido é 5,5-5,6. Recentemente, a tecnologia tem possibilitado o uso de água com teores de pureza e minerais ajustados à produção de cerveja (AQUARONE *et al.*, 2001; MEGA; NEVES; ANDRADE, 2011; PALMER; KAMINSKI, 2021).

Conforme Papazian (2014), alguns dos sais minerais mais comuns adicionados ou mensurados na água de fabricação de cerveja são o sulfato de cálcio (CaSO_4) e o cloreto de sódio (NaCl). Quando estes ou qualquer outro sal mineral se dissocia após se dissolverem em água, passam a contribuir com sabores característicos para a cerveja, apresentando também potencial para reagir com outros minerais e íons presentes em outros ingredientes utilizados no processo de fabricação da bebida.

A água e suas propriedades apresentam influência em todos os processos de fabricação de cerveja. Malteação, mosturação, fervura, fermentação e limpeza derivam da eficiência e características, em parte, da água utilizada, uma vez que há uma importante interação entre a química da água e o processo de fabricação de cerveja, podendo haver interferência no sabor, aroma, cor, retenção de espuma, turbidez, teor de álcool e estabilidade da cerveja (PAPAZIAN, 2014).

2.2.2 Malte e adjuntos

O malte é um produto de origem da germinação das sementes de qualquer cereal, destacando-se na produção de cerveja a cevada, milho, trigo, entre outros. O mais utilizado é

o malte de cevada, que confere sabor, odor e corpo característicos à cerveja. A cevada, planta gramínea do gênero *Hordeum*, é umedecida e germinada a fim de produzir enzimas, que serão utilizadas na conversão das matérias-primas em mosto cervejeiro (VENTURINI FILHO, 2000).

Conforme Carvalho (2009), quando o grão de cevada é submetido a um processo de germinação controlada para desenvolver enzimas e modificar o amido, tornando-o mais macio e solúvel, ele é chamado de malte. Resumidamente, o processo de malteação é constituído por três etapas: maceração, germinação e secagem.

- a) Maceração: a maceração prepara o grão para a etapa fundamental da germinação. O grão, inicialmente com valores de umidade na ordem de 12-14%, é posto em contato com a água, elevando seu teor até cerca de 43%;
- b) Germinação: A germinação é o processo biológico que torna as paredes celulares do grão quebradiças e facilita a extração do amido. Durante a germinação, são sintetizadas as enzimas hidrolíticas necessárias à hidrólise parcial dos componentes da cevada (amido, proteína, parede celular) que dão origem aos nutrientes requeridos pela levedura;
- c) Secagem (torrefação): quando o tamanho do caulículo do grão atinge um comprimento que se situa cerca de 75% de seu tamanho, a germinação é parada por secagem ou torrefação controladas em elevadas temperaturas, conferindo coloração e sabor peculiar ao malte.

A contribuição da cevada para o sabor e aroma da cerveja é amplamente desenvolvida durante o processo de malteação, bem como sua contribuição química para o processo de fabricação de cerveja. Como um ingrediente, o malte fornece sacarídeos, proteínas, nitrogênio amino livre (FAN – *free amino nitrogen*) e enzimas que facilitam as reações fermentativas do processo, e o conteúdo dessas características é usado para descrever a “qualidade do malte” como ingrediente. Essas características de qualidade do malte podem influenciar o sabor e aroma, como excesso de sacarídeos que não são completamente fermentados resultam em uma cerveja doce, e excesso de componentes FAN que influenciam as reações de fermentação resultam em níveis altos de 2,3-butanodiol e diacetil, produzindo sabor de caramelo e pipoca amanteigada (BAMFORTH; BARCLAY, 1993; BETTENHAUSEN *et al.*, 2018; FOX, 2010).

A composição química do malte varia de acordo com fatores do processo de malteação, como a duração da germinação ou a extensão da modificação do grão. No entanto, durante sua fabricação, são nas etapas de processamento térmico (secagem ou torrefação) que há os maiores impactos sobre a cor e sabor/aroma do produto. Com isso, *flavor* e cor são

características importantes e a combinação específica de matéria-prima e processos térmicos que dão origem às características desejadas de interesse (YAHYA; LINFORTH; COOK, 2014).

Na produção de cerveja, o malte já moído é adicionado em água quente (aproximadamente 62°C). Neste ponto, os grânulos de amido incham e permitem sua conversão em açúcares fermentáveis através de enzimas, principalmente alfa e beta amilases. Etapas adicionais em diferentes temperaturas são realizadas, por exemplo, para que outra atividade enzimática prossiga o processo como fitases, proteases e peptidases. O amido é hidrolisado em oligossacarídeos em até quatro graus de polimerização (DP4), como maltose, maltotriose, frutose, glicose e sacarose (VAN DONKELAAR *et al.*, 2016).

O malte pode ser substituído parcialmente por adjuntos cervejeiros, que são definidos como produtos ou materiais que fornecem carboidratos para o mosto cervejeiro, com exceção da cevada maltada. Normalmente, os adjuntos são produtos do beneficiamento de cereais ou de outros vegetais ricos em carboidratos, sendo os mais comuns utilizados o milho, arroz, aveia, cevada não maltada, trigo e sorgo (SCHABO *et al.*, 2020). Os adjuntos são empregados principalmente por razões econômicas por apresentarem menor custo na produção de extrato, além de poder melhorar a qualidade físico-química e sensorial da cerveja acabada (AQUARONE *et al.*, 2001).

A Lei da Pureza Alemã da cerveja foi estabelecida para evitar o uso de matérias-primas perigosas como raízes, especiarias e, em alguns casos, derivados de animais. Porém, trigo, arroz, centeio, aveia, milho, cevada não maltada e, em menor grau, sorgo, milheto e mandioca são todos usados na fabricação de cerveja. A maioria destes grãos, particularmente arroz e milho, é frequentemente usada por grandes indústrias como adjuntos, a fim de suplementar o ingrediente principal do mosto e produzir um produto mais econômico; pseudocereais como quinoa, trigo sarraceno, amaranto e aveia são utilizados na produção de cerveja sem glúten; trigo e aveia são comumente utilizados como adjunto devido à capacidade de promover a estabilidade da espuma e, antes do uso do lúpulo, outras ervas amargas, especiarias e flores eram adicionadas para gerar perfis sensoriais diferentes e criar cervejas personalizadas (BENUCCI *et al.*, 2020; HUMIA *et al.*, 2019; MASTANJEVIC *et al.*, 2018; VILLACRERES *et al.*, 2022).

2.2.3 Lúpulo

O lúpulo (*Humulus lupulus*), espécie da família das *Cannabaceae*, se caracteriza por ser um vegetal dióico (produz flores masculinas e femininas). Na produção da cerveja, são utilizadas apenas as flores femininas, nas quais contêm a substância lupulina quando fecundadas, conferindo o amargor, aroma e outras propriedades à cerveja. Além das características citadas, o lúpulo apresenta propriedades bacteriostáticas, contribuindo também para a estabilidade do sabor e da espuma da cerveja (MATOS, 2011).

Os principais constituintes químicos encontrados nas flores de lúpulo são resinas (15-30%), óleos essenciais (0,5-3%), proteínas (15%), polifenóis (4%) e celulose (43%), entre outros componentes (ALMAGUER *et al.*, 2014). Dentre os citados, os compostos mais influentes na produção de cerveja são as resinas e os óleos essenciais, ambos contidos na lupulina. As resinas são constituídas, em sua maior parte, dos ácidos alfa e beta, responsáveis pelo amargor das cervejas. Os óleos essenciais, por sua vez, são uma mistura de componentes, principalmente hidrocarbonetos da família dos terpenos, ésteres, aldeídos, cetonas, ácidos e alcoóis, os quais influenciam no aroma e o sabor da cerveja (REITENBACH, 2010).

Na produção de cerveja, especificamente na etapa de fervura, o lúpulo é adicionado ao mosto. A alta temperatura proporcionada nesta etapa permite a isomerização dos α -ácidos humulonas em iso- α -ácidos (transisohumulonas), fração responsável pelo amargor da bebida (BLANCO *et al.*, 2006). Uma grande quantidade de proteína é precipitada durante a fervura e, posteriormente, extraída do líquido que continuará no processo de fabricação da cerveja.

A unidade de amargor da cerveja (IBU – *International Bitterness Unit*) é uma medida da estimativa do amargor da bebida, sendo que 1mg de iso- α -ácidos, a cada litro de cerveja, corresponde a 1 IBU. Normalmente, quanto maior o nível de iso- α -ácidos na cerveja, maior a intensidade percebida de amargor (OLADOKUN *et al.*, 2016; OLIVER; COLICCHIO, 2011).

Ainda que o lúpulo seja conhecido há milhares de anos, seu uso na cerveja não é antigo como a história da cerveja em si. Inicialmente, o lúpulo foi adicionado à fabricação de cerveja por sua capacidade de preservar o produto. No entanto, os consumidores começaram a gostar de seu sabor e o lúpulo se tornou um ingrediente básico da cerveja, sendo capaz de contrabalancear, com seu amargor, a doçura proporcionada pelo malte (BAMFORTH, 2000; HAYWARD; WEDEL; McSWEENEY, 2019; OLADOKUN *et al.*, 2016; SAKAMOTO; KONINGS, 2003; SCHÖNBERGER; KOSTELECKY, 2011).

Apesar de o lúpulo ser um ingrediente utilizado em pequena quantidade, apresenta grande impacto no sabor da cerveja, principalmente no amargor, aroma, estabilidade e aparência. O mercado de cerveja artesanal mudou a forma como o lúpulo é utilizado no processo de fabricação de cerveja e este ingrediente tornou-se um componente fundamental

para o sucesso do movimento artesanal, devido à demanda e produção de estilos de cerveja altamente lupuladas (VILLACRERES *et al.*, 2022; YAN *et al.*, 2019).

Para a saúde humana, uma maior quantidade de componentes amargos derivados do lúpulo, como iso- α -ácidos ou isohumulonas na cerveja, tem sido associada a uma atenuação do declínio cognitivo (ANO *et al.*, 2019) ou depósitos de gordura corporal (OBARA *et al.*, 2009). Para as características sensoriais, o lúpulo pode conferir à cerveja voláteis e aromas, aspectos fundamentais para o consumidor na hora de escolher um tipo ou marca específica de cerveja (MAYER; LACHENMEIER, 2015; ROSALES *et al.*, 2021).

2.2.4 Levedura

As leveduras são organismos eucarióticos pertencentes ao Reino Fungi. Por serem unicelulares, crescem mais rapidamente do que os fungos filamentosos e estão presentes em vários processos bioquímicos, sendo utilizadas na fabricação de cervejas e pães há milhares de anos. Reproduzem-se através de brotamento ou assexuadamente por fissão binária (CARVALHO; BENTO; ALMEIDA e SILVA, 2006).

As leveduras (*Saccharomyces spp.*) são utilizadas na indústria de alimentos e bebidas em diversas formas, como na indústria de panificação, na fermentação alcoólica nas indústrias de cerveja, vinhos e álcool, além de em outros processos fermentativos como catalisador biológico (PINTO *et al.*, 2013).

A utilização de leveduras no processo de fabricação da cerveja ocorre devido aos processos metabólicos produzidos pelas mesmas. Na presença de oxigênio, produzem crescimento elevado do número de células (biomassa), sendo que na ausência do oxigênio, essa taxa diminui, originando como subprodutos etanol e dióxido de carbono. Além de converter o açúcar em etanol e CO₂, a levedura produz compostos secundários resultantes de seu metabolismo, o que impacta no sabor e aroma da cerveja (EINFALT, 2021). Assim, o uso de levedura específica afeta a complexidade sensorial do produto final, além de características como eficiência de fermentação ou capacidade de floculação (BUDRONI *et al.*, 2017).

Os gêneros que estão diretamente relacionados com a fermentação alcoólica são, em sua maioria, as leveduras do gênero *Saccharomyces*, mas os gêneros *Brettanomyces*, *Dekkera*, *Torulaspore* e *Zygosaccharomyces* também são utilizados na produção de bebidas alcoólicas (SILVA, 2017).

Conforme Silva (2019), a *Saccharomyces cerevisiae*, espécie mais estudada do gênero, é o microrganismo mais explorado industrialmente em todo o mundo. As cepas desta espécie

são utilizadas na produção industrial de etanol e na fermentação em bebidas alcoólicas, incluindo cerveja, vinho, saquê e destilados. Esta espécie também é utilizada como fermento para pães e, provavelmente, é a espécie mais utilizada nos casos de fermentação de alimentos artesanais na África, Ásia e Américas.

As espécies *Saccharomyce cerevisiae* geralmente são leveduras do tipo *Ale* (alta fermentação), com temperatura ótima de multiplicação e ação entre 10-25°C e se situam no topo dos fermentadores durante o processo de fermentação, normalmente produzindo uma cerveja com alta taxa de ésteres. Por outro lado, as leveduras *Saccharomyces pastorianus* são de baixa fermentação (tipo *Lager*), apresentam temperaturas ótimas entre 7 e 15°C e se sedimentam no fundo dos fermentadores quando a fermentação se aproxima do seu fim (SILVA, 2019).

Muitos laboratórios se concentraram em expandir o número de cepas utilizáveis na produção de cerveja artesanal, e novas cepas de *S. cerevisiae*, *S. pastorianus* e outras leveduras e bactérias estão sendo desenvolvidas continuamente para atender aos estilos e características sensoriais exigidas pelos cervejeiros artesanais. Exemplos disso é a *Saccharomyces cerevisiae* var *diastaticus* usada para a produção de cervejas de alto teor alcoólico (como as tradicionais *Saison*, *Farmhouse Ales*, *Belga Witbier* ou *Brut IPA*), *Saccharomycodes ludwigii*, para a fabricação de cervejas de baixo teor alcoólico, ou *Kveik*, uma cultura mista de múltiplas linhagens de *S. cerevisiae* originárias da Noruega que apresentam boa tolerância ao álcool, alta atenuação, alta velocidade de fermentação e com alta temperatura de fermentação sem sabores estranhos (BURINI *et al.*, 2021; VILLACRERES *et al.*, 2022).

2.3 Cervejas especiais

A cerveja é uma das bebidas alcoólicas mais populares e consumidas no Brasil e em todo o mundo. De acordo com a tradicional Lei da Pureza Alemã, a cerveja é produzida apenas utilizando os ingredientes básicos: água, cevada, lúpulo e levedura. Porém, consumidores de cerveja estão frequentemente procurando por características únicas e diferentes daquelas já encontradas em cervejas comerciais (HUMIA *et al.*, 2020).

O mercado mundial de cerveja é dominado por cervejarias tradicionais e produção em alta escala. Porém, uma tendência apresenta significativo crescimento no segmento de cervejas: consumidores de cerveja estão buscando por características diferentes do que marcas muito conhecidas oferecem (AQUILANI *et al.*, 2015). Novos estilos de cerveja com novos

sabores e aromas, além de processos de produção modificados, estão ganhando popularidade nos mercados da Europa e EUA (DUCRUET *et al.*, 2017; SANNA; PRETTI, 2015), além do Brasil, principalmente nos estados de Minas Gerais, Santa Catarina, Rio Grande do Sul e São Paulo.

A indústria cervejeira caracteriza-se pela concorrência monopolista como estrutura de mercado com muitos concorrentes, diferenciação de produtos específicos e com livre entrada e saída. A diferenciação do produto reduz a concorrência entre as empresas e, portanto, as empresas podem adquirir alguma participação de mercado. As preferências específicas e diferenciadas dos consumidores do setor cervejeiro levam à diferenciação, que representa um importante nicho de mercado para a cerveja especial (POKRIVČÁK *et al.*, 2019).

Diante do sucesso das cervejas especiais produzidas por cervejarias artesanais no mercado, tem-se uma oportunidade de exploração por cervejarias industriais. As grandes cervejarias estão percebendo essa nova tendência e estão tentando se reposicionar com maior foco e investimento no setor de cervejas especiais. Os fabricantes de cerveja estão considerando as cervejas especiais como uma opção para combater baixas vendas em toda a Europa, melhorar as margens de lucro, atrair mais consumidores femininos e novos consumidores, concentrando-se em cervejas com sabores específicos, além de atrair consumidores que escolheriam outros tipos de bebida alcoólica. Conseqüentemente, várias cervejarias comerciais tentam explorar este segmento comprando cervejarias artesanais ou fabricando cervejas pseudo-artesanais como parte da estratégia de diversificação (DONADINI *et al.*, 2016).

Uma definição simples e oficial de cerveja artesanal é complicada pelas diferenças de significado e legislação entre os países e sua tradição cervejeira (GARAVAGLIA; SWINNEN, 2018). Em resumo, as cervejas artesanais são caracterizadas por possuírem características sensoriais originais, novos sabores e aromas, estilos únicos de fabricação, diversidade de estilos de cerveja e qualidade superior às cervejas comerciais (VILLACRECES; BLANCO; CABALLERO, 2022).

Outra vertente expõe ainda duas características importantes da cerveja artesanal: a natureza tradicional do método de produção da cerveja e o pequeno tamanho da instalação de produção em que é fabricada. A primeira característica foi descrita pelos entusiastas da cerveja como cerveja "que é cuidadosamente produzida" ou produzida por "um processo mais complicado", enquanto a última característica foi descrita como cerveja "produzida em pequena escala" ou "que tem uma produção limitada" (ELZINGA; TREMBLAY; TREMBLAY, 2015; JAEGER *et al.*, 2020).

A cerveja especial, particularmente em comparação com a cerveja comercial de alta produtividade, é uma categoria de produtos que chama a atenção de pesquisadores em todo o mundo. Enquanto os consumidores de cervejas comerciais normalmente se atentam na fabricação industrial, consumidores de cervejas especiais deixam sua atenção no sabor, processo produtivo e ingredientes da bebida. Em particular, o aumento da popularidade deste segmento de cerveja se beneficiou de inovação, criatividade, tipicidade e autenticidade que caracterizam a cerveja especial (artesanal) como uma experiência que oferece prazer, gozo, senso de identidade e de pertencimento, reconhecimento social e sustentabilidade (DONADINI; PORRETTA, 2017; WILLIANS; BARRETTA, 2018).

De acordo com os ingredientes e com o processo de produção, são muitas as variedades de cervejas elaboradas. Dois grandes grupos de cervejas são definidos conforme o tipo de fermentação utilizado no processo. Cervejas *Lagers*, mais populares ao redor do mundo, são produzidas com cepas de *Saccharomyces pastorianus*, iniciando a fermentação em temperaturas entre 3,3 e 13 °C e no fundo do recipiente fermentador; por outro lado, cervejas *Ales* normalmente são fermentadas em temperaturas mais altas (aproximadamente 20 °C), no topo, com cepas de *Saccharomyces cerevisiae*, sendo mais comuns em países do norte do mundo como Alemanha, Bélgica, Canadá, Estados Unidos e Grã-Bretanha (OLIVEIRA NETO *et al.*, 2017).

As características organolépticas da cerveja são altamente discerníveis pelos consumidores com base no sabor, aroma, aparência e sensação na boca. Estes atributos organolépticos são variáveis e definem o estilo geral da cerveja e as tendências seguidas pelos consumidores (BRIGGS *et al.*, 2004). Variações na genética de ingredientes como levedura (cepa) e lúpulo (cultivar) são críticos no desenvolvimento de estilos de cervejas: por exemplo, a *Hefeweizen* criada com levedura de cerveja *Ale Hefeweizen* e a *Imperial IPA* criada utilizando lúpulos *Cascade*, *Columbus* e *Amarillo* (GALLONE *et al.*, 2016; BETTENHAUSEN *et al.*, 2018).

Atualmente, vários compostos voláteis diferentes que podem afetar a qualidade do *flavor* final da cerveja estão sendo identificados, podendo distingui-los em grupos como os compostos originados a partir de ingredientes, a citar malte de cevada e lúpulo; a partir da secagem do malte e fervura do mosto; como subprodutos do metabolismo da levedura durante a fermentação, além de contaminações e condições inadequadas de armazenamento (BOGDAN; KORDIALIK-BOGACKA, 2017; HOLT *et al.*, 2018).

Embora as matérias-primas sejam praticamente uniformes em todos os estilos de cerveja, alguns sabores e aromas são únicos conforme tradição de produção da cerveja.

Muitos estudos estão sendo conduzidos em relação à química dos compostos de aroma das cervejas especiais, especialmente em termos de composição e estrutura de ésteres voláteis, que podem variar bastante entre os diferentes processos de fabricação de cerveja. Neste cenário, a vantagem das cervejas especiais é baseada na variedade de matérias-primas alternativas na lista de ingredientes e à experimentação de combinações inovadoras de ingredientes e sabores no copo (DONADINI *et al.*, 2016; HUMIA *et al.*, 2019).

A cerveja é fonte de muitos nutrientes como vitaminas, minerais, carboidratos, aminoácidos e compostos bioativos. Além disso, cervejas adicionadas de ingredientes diferenciados e com matéria prima de qualidade podem apresentar características favoráveis ao produto. O consumo moderado de cerveja tem mostrado impactos benéficos no sistema imunológico humano e resultado em mudanças favoráveis em vários biomarcadores cardiovasculares como o perfil lipídico plasmático, *status* antioxidante plasmático total, bem como os níveis de apolipoproteína A1, adiponectina e fibrinogênio (SPAGGIARI *et al.*, 2020).

De acordo com pesquisadores, o consumo diário moderado de cerveja corresponde a cerca de 330 mL para mulheres e 660 mL para homens (BRIEN *et al.*, 2011; DIAZ *et al.*, 2002; DUCRUET *et al.*, 2017). Poli *et al.* (2013) já citam os teores de etanol diários recomendados como consumo moderado, sendo em até 12 g de etanol por dia para mulheres e 24 g de etanol para homens, para todos os tipos de bebidas alcoólicas combinadas.

A identificação de atributos específicos de caracterização do produto para quais os consumidores ou segmentos revelam uma sensibilidade e interesses específicos é fundamental para traduzir as necessidades, desejos e expectativas dos consumidores, objetivando o melhor produto possível. Os consumidores são essenciais para esse processo e incluir a voz dos consumidores nos estágios iniciais do desenvolvimento de novos produtos, como uma referência antes da tomada de decisões finais, é extremamente valioso, pois essa abordagem ajuda a garantir as direções a serem tomadas no processo de desenvolvimento de produtos (DONADINI *et al.*, 2016).

2.4 Comportamento do consumidor

De acordo com Blackwell, Miniard e Engel (2009), comportamento do consumidor são as atividades nas quais as pessoas se ocupam quando obtêm, consomem e dispõem de produtos e serviços. De forma geral, é tradicionalmente o estudo de “por que, como, quando e onde as pessoas compram, usam e descartam”. Segundo esses autores, encontrar estratégias

mais eficazes para influenciar o comportamento dos consumidores tem sido uma das principais preocupações das empresas e de outras entidades (ANTONIALLI, 2015).

Conforme Blythe (2013), as pessoas compram coisas para satisfazer várias necessidades todos os dias. Tomar decisões de compra afeta não apenas o próprio comprador, mas também a seus familiares, meio ambiente e, o mais importante, as empresas das quais os consumidores compram o produto. Portanto, torna-se essencial entender a maneira como as pessoas compram e os motivos dessa compra.

A compreensão do comportamento dos consumidores contribui para o aumento do número de clientes das empresas. Entretanto, eles encontram um vasto universo de produtos, marcas, preços e fornecedores pelos quais optar. Acredita-se que os consumidores avaliam qual produto proporciona maior valor, ou seja, procuram sempre maximizar o valor do produto dentro dos limites impostos pelos custos e pelas limitações de conhecimento, mobilidade e receita. Assim, os consumidores formam uma expectativa de valor e agem com base nela, e a probabilidade de satisfação e repetição da compra depende de o produto atender ou não a essa expectativa de valor (ENGEL *et al.*, 1999).

No âmbito gerencial, as empresas devem estar cientes da experiência que os consumidores obtêm da compra, pois geralmente isso afeta a sua atuação futura. Assim, a construção de lealdade do cliente é outro aspecto que deve ser claramente entendido em conjunto com a compreensão do comportamento do consumidor (SPÁČIL; TEICHMANNOVÁ, 2016).

Segundo Rezende e Avelar (2012), o principal objetivo ao se estudar o comportamento dos consumidores é investigar os fatores de influência e as características do consumidor a fim de compreender os processos de consumo de forma crítica e obter subsídios para a proposição de ofertas de *marketing* adequadas, bem como de políticas públicas de regulamentação. Ainda, conforme Kotler (2000), o estudo do comportamento do consumidor fornece informações para o desenvolvimento de novos produtos, modificações de produtos e embalagens, determinação de preço e de mensagens publicitárias.

Referente ao comportamento do consumidor de alimentos, Lucchese, Batalha e Lambert (2006) ressaltam que os produtos alimentares têm um importante papel na vida cotidiana uma vez que suas funções para os seres humanos vão além de fontes de suprimento de uma necessidade vital. Além disso, a alimentação humana não pode ser definida simplesmente como uma necessidade fundamental, mas como uma ferramenta a serviço da saúde, prazer, estética, entre outros.

Asp (1999) ainda destaca que os alimentos podem denotar identidade étnica, podem ser utilizados socialmente para descrever amizades, proporcionar hospitalidade, para mostrar *status* ou prestígio, para expressar sentimentos e emoções, entre demais atributos.

Conforme Bongoni *et al.* (2013), as opiniões, necessidades e expectativas dos consumidores sobre os alimentos mudaram drasticamente nas últimas décadas. Além das preferências sensoriais, os benefícios à saúde gerados pelos alimentos são fatores cada vez mais importantes para a escolha dos produtos. Para Bragante (2012), os consumidores modernos estão mais exigentes e menos leais à marca, obrigando as empresas a se diferenciarem continuamente.

A palavra “experiência” está diretamente ligada ao estilo de vida do consumo contemporâneo, sendo observado, muitas das vezes, um consumo experimental no lugar de funcional. Ou seja, o consumidor está deixando de ser um colecionador de posses, se tornando um colecionador de experiências (GOMEZ-CORONA *et al.*, 2017). Nesse contexto de constantes mudanças, o estudo do comportamento do consumidor se torna uma importante ferramenta para as indústrias.

A ocasião de consumo de bebidas alcoólicas pode incluir fatores como a localização física do consumidor, o tipo e o número de pessoas presentes, o dia da semana, a ocasião do uso e até a hora do dia (SILVA *et al.*, 2017). Por esse motivo, as variáveis situacionais do consumo de bebidas alcoólicas se tornaram um aspecto bastante complexo do comportamento do consumidor (CALVO-PORRAL; LEVY-MANGIN, 2019).

As expectativas criadas no consumidor dependem da experiência anterior, diferenças individuais e informações intrínsecas ou extrínsecas relacionadas ao produto. Os fatores intrínsecos são aspectos de um produto que estão diretamente relacionados às suas propriedades físico-químicas e sensoriais, como cor ou aroma; os fatores extrínsecos, por outro lado, estão relacionados ao produto, mas não fazem parte dele: normalmente estão relacionadas à embalagem e aos rótulos do produto (BLACKMORE *et al.*, 2020).

As informações contidas no rótulo são exemplos de fatores extrínsecos relacionados aos produtos, sendo a rotulagem uma forma de comunicação fácil e conveniente com o consumidor. Informações explícitas sobre um produto, incluindo informações éticas, informações sobre produção, nutrição, mas também sobre sabor e propriedades sensoriais do produto, bem como informações mais implícitas transmitidas pela marca, cor da embalagem ou imagens, demonstraram alterar as expectativas dos consumidores e/ou a percepção (BLACKMORE *et al.*, 2020; GIL-PÉREZ *et al.*, 2019; REBOLLAR *et al.*, 2017; SPENCE *et al.*, 2015).

Em relação ao comportamento do consumidor de cervejas especiais, tem-se algumas ponderações importantes já elucidadas na literatura, conforme descritas a seguir.

2.4.1 Comportamento do consumidor de cervejas especiais

Nos últimos anos, houve uma notável mudança no comportamento de uma parcela dos consumidores de cerveja, os quais se tornaram mais conscientes, sofisticados e exigentes em relação à cultura de bebidas em termos de qualidade e hábitos de consumo desejados. Tais consumidores representam um segmento que leva em consideração as características e a qualidade dos ingredientes utilizados na fabricação da bebida, além de estar disposto a pagar mais do que o preço de mercado convencional por estes produtos diferenciados, conhecidos como cervejas especiais (CARVALHO *et al.*, 2018).

Estudos sobre o comportamento do consumidor de cervejas especiais vêm sendo realizados e, tratando-se do perfil do consumidor, ao contrário do mercado de cervejas de massa, o mercado de cervejas artesanais tende principalmente a atender um segmento da população com alta renda, caindo na faixa etária de 21 a 35 anos, e diferenciado por um alto nível de educação (JAEGER *et al.*, 2020; RIVAROLI; CALVO-PORRAL; SPADONI, 2022).

Em relação ao mercado, Donadini *et al.* (2016) relatam que as cervejas especiais parecem satisfazer a demanda por variedade com mais sucesso do que as marcas industriais comercializadas em massa, pois estão melhor posicionadas para criar uma cultura de consumo única e íntima. Consumidores de cervejas especiais europeus, por exemplo, consomem menos cerveja, porém buscam mais as cervejas especiais e mais caras pelo fato de estarem mais dispostos a experimentar novos sabores da bebida.

Conforme Cardello *et al.* (2016) e Rivaroli, Calvo-Porral e Spadoni (2022), os consumidores começaram a ser cada vez mais atraídos por novos estilos e sabores de cerveja oferecidos por cervejarias artesanais e microcervejarias, evitando cervejas produzidas em massa por seu perfil de sabor convencional. Na busca por cervejas com diferentes características das oferecidas por grandes marcas e de elevado consumo, novos estilos de cerveja com novos sabores, aromas e processos de fabricação modificados ganham popularidade com os consumidores de cervejas especiais (DUCRUET *et al.*, 2017). Além disso, Donadini *et al.* (2016) constataram que uma experiência de consumo positiva com cervejas especiais aumenta a vontade de experimentar outros produtos e buscar mais informações sobre cerveja.

As diferenças no comportamento de consumo entre cervejas especiais e comerciais estão, basicamente, na premissa de que o consumo de cervejas especiais é mais voltado a uma experiência, enquanto o consumo de cervejas comerciais é visto mais como utilidade (WILLIAMS; BARRETTA, 2018). Especificamente, as cervejas especiais são vistas como uma experiência pelos consumidores com ou sem conhecimento sobre cerveja, oferecendo, durante o consumo, prazer, reconhecimento social e senso de identidade que os consumidores, geralmente, não associam a cervejas comerciais produzidas por grandes cervejarias (HAYWARD; WEDEL; McSWEENEY, 2019). Os consumidores de cerveja artesanal também foram caracterizados como tendo uma forte autoidentidade (RIVAROLI; HINGLEY; SPADONI, 2018) e buscadores de novidades (MALONE; LUSK, 2018).

Em relação ao consumo de cerveja, os consumidores tornaram-se mais conscientes em termos de qualidade desejada. Conforme Lee, Frederick e Ariely (2006), as características intrínsecas que influenciam na qualidade percebida do produto são os componentes nutricionais, a natureza e as tecnologias de processamento da cerveja. Por outro lado, entre os atributos extrínsecos estão o tipo de recipiente e a embalagem da cerveja (DONADINI; PORRETA, 2017).

Da mesma forma, a conscientização da qualidade da cerveja aumentou entre os consumidores, sendo que as preferências de cerveja do consumidor parecem estar voltadas a busca pela qualidade e ao aspecto artesanal do produto. Por outro lado, a cerveja convencional industrial é percebida como um produto secundário menos especial, consumido em momentos de socialização, frequentemente relacionado a uma mercadoria da categoria de bebidas cujo consumo se baseia em suas características funcionais de “saciar a sede” (AQUILANI *et al.*, 2015; BRINK *et al.*, 2011; GÓMEZ-CORONA *et al.*, 2016; MEJLHOLM; MARTENS, 2006).

Gómez-Corona *et al.* (2016) descreveram seis percepções sobre o comportamento de consumo de cervejas especiais: é uma experiência multissensorial; a cerveja é o ponto focal do consumo, normalmente em casa ou em evento ou atividade específicos; a cerveja é um produto de alta qualidade e produção local; concentra-se nos atributos do produto como sabor, textura e embalagens diferenciadas; a cerveja é consumida sozinho ou com companhias muito seletivas; a cerveja tem baixa disponibilidade e, para não conhecedores, é um produto caro e impraticável.

Em pesquisa realizada por Donadini e Porretta (2017), avaliando os padrões de preferência dos consumidores de cervejas especiais na Itália, observou-se que consumidores italianos de cervejas especiais atribuíram maior importância ao tipo de recipiente e à

tecnologia de fabricação de cerveja, enquanto a menor importância foi atribuída aos equipamentos utilizados na produção. Quanto ao interesse do consumidor sobre o produto, atributos como garrafa de vidro com tampa de coroa e microfiltração da cerveja apresentaram efeitos positivos, enquanto lata de alumínio e cerveja produzida em alta escala apresentaram impactos negativos.

O comportamento do consumidor de cervejas especiais também pode ser avaliado quanto ao local de consumo. Calvo-Porrall e Levy-Mangin (2019), avaliando a influência do local de consumo de cerveja no comportamento dos consumidores, notaram que os consumidores de cervejas que preferencialmente consomem o produto fora de suas residências exigem uma cerveja de alta qualidade, enquanto os consumidores domésticos preferem pagar menos por uma cerveja, buscando boa relação custo-benefício.

Enquanto os consumidores de cerveja artesanal são frequentemente caracterizados por suas preferências sensoriais por cervejas inovadoras de alta complexidade de sabor, alta qualidade e autenticidade, há também uma série de outras características atitudinais, motivacionais e comportamentais que já foram identificadas. Primeiramente, os consumidores de cerveja artesanal são levados a buscar cervejas autênticas (GÓMEZ-CORONA *et al.*, 2016), que são produzidas em pequenos lotes por cervejeiros artesanais locais. Eles foram observados desenvolvendo regularmente seus conhecimentos sobre cervejas e *brew pubs*, explorando novos sabores em cervejas e procurando novas cervejas e cervejarias (THURNELL-READ, 2016).

Os consumidores de cerveja artesanal também tendem a fazer compras em lojas de cervejas especiais e demonstraram ter uma alta consciência e conhecimento de cervejas (GÓMEZ-CORONA *et al.*, 2016; JAEGER *et al.*, 2017). Eles viajam para cervejarias artesanais locais, vão a degustações de cervejas artesanais, procuram e participam de eventos de cervejas artesanais (MURRAY; O'NEILL, 2012), incluindo festivais de cervejas artesanais, e trocam informações sobre cervejas artesanais em redes sociais destinadas aos entusiastas desse produto (JAEGER *et al.*, 2020).

3 CONSIDERAÇÕES FINAIS

A cerveja, feita principalmente a partir de água, malte de cevada, lúpulo e levedura, é uma bebida altamente produzida e consumida ao redor mundo e, com o crescente aumento no surgimento de novas cervejarias, inúmeras pesquisas estão sendo desenvolvidas. O mercado de cervejas, nos últimos anos, passou por transformações com a solidificação das cervejas artesanais.

Cervejas artesanais (ou especiais) são cervejas que se diferenciam das cervejas comerciais (ou tradicionais) quanto a aspectos sensoriais, escala de produção, capacidade e porte da unidade produtiva, entre outros. Acompanhado dessa diferenciação, surge-se também um público consumidor diferente.

O consumo de cervejas artesanais é visto pelos consumidores como uma experiência capaz de gerar senso de identidade e reconhecimento social. Consumidores de cervejas artesanais buscam por produtos com novos sabores, aromas e estilos, com maior complexidade sensorial e processos de produção diferenciados.

Diferentes consumidores de cerveja artesanal apresentam diferentes comportamentos quanto às suas preferências, percepções e intenção de compra. Diante disso, o estudo desses comportamentos é capaz de contribuir gerencialmente com produtores de cerveja no desenvolvimento de novos produtos e definição de estratégias de *marketing* direcionadas para diferentes grupos de consumidores.

Produtores de cervejas especiais devem buscar conhecer seu público consumidor e os diferentes segmentos de mercado. Assim, a compreensão do comportamento do consumidor é fundamental para as indústrias cervejeiras atenderem os desejos e as necessidades dos consumidores.

Dessa forma, estudos que identifiquem a percepção que produtores têm sobre os consumidores e o real comportamento desses consumidores, bem como a identificação dos diferentes grupos de consumidores de cervejas artesanais com base em suas características, preferências e percepções, são importantes para o crescimento e solidificação do mercado de cervejas artesanais.

Estudos futuros podem ser realizados objetivando melhoria na definição dos termos de classificação de cervejas como especiais, artesanais, comerciais e tradicionais, contribuindo de forma teórica com novos e adequados conceitos para as cervejas acima mencionadas.

REFERÊNCIAS

- ALMAGUER, C. *et al.* *Humulus lupulus* – a story that begs to be told. A review. **Institute of Brewing & Distilling**, [London], v. 120, n. 4, p. 289-314, Sept. 2014. Disponível em: <https://onlinelibrary.wiley.com/doi/full/10.1002/jib.160>. Acesso em: 15 abr. 2021.
- ANO, Y. *et al.* Iso- α -acids, hop-derived bitter components of beer, attenuate age-related inflammation and cognitive decline. **Frontiers in Aging Neuroscience**, [Lausanne], v. 11, n. 16, P. 1-9, Feb. 2019. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/30778295/>. Acesso em: 18 maio 2022.
- ANTONIALLI, F. **Desenvolvimento de novos produtos**: Um estudo mercadológico e tecnológico sobre picolé produzido com soro de leite. 2015. 158 p. Dissertação (Mestrado em Administração) – Universidade Federal de Lavras, Lavras, 2015.
- AQUARONE, E. *et al.* **Biotecnologia industrial**. 4. ed. São Paulo: Edgar Blücher Ltda, 2001.
- AQUILANI, B. *et al.* Beer choice and consumption determinants when craft beers are tasted: An exploratory study of consumer preferences. **Food Quality and Preference**, [Oxford], v. 41, p. 214-224, Apr. 2015. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329314002614>. Acesso em: 07 mar. 2021.
- ASP, E. H. Factors affecting food decisions made by individual consumers. **Food Policy**, Guildford, v. 24, n. 2-3, p. 287-294, May 1999. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S030691929900024X>. Acesso em: 08 abr. 2022.
- BAMFORTH, C. W.; BARCLAY, A. H. P. Malting technology and the uses of malt. *In*: MACGREGOR, A.; BHATTY, R. S. (eds.). **Barley: Chemistry and Technology**. St Paul: American Association of Cereal Chemists, 1993. p. 297-354.
- BAMFORTH, C. W. Brewing and brewing research: Past, present and future. **Journal of the Science of Food and Agriculture**, [Chichester], v. 80, n. 9, p. 1371-1378, June 2000. Disponível em: <https://onlinelibrary.wiley.com/doi/abs/10.1002/1097-0010%28200007%2980%3A9%3C1371%3A%3AAID-JSFA654%3E3.0.CO%3B2-K>. Acesso em: 08 jun. 2022.
- BELTRAMELLI, M. **Cervejas, brejas e birras**: Um guia completo para desmistificar a bebida mais popular do mundo. São Paulo: Leya, 2012.
- BENUCCI, I. *et al.* Prolyl endopeptidase from *Aspergillus niger* immobilized on a food-grade carrier for the production of gluten-reduced beer. **Food Control**, [Oxford], v. 110, Apr. 2020. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0956713519305766>. Acesso em: 08 jun. 2022.

BETANCUR, M. I. *et al.* Factors influencing the choice of beer: A review. **Food Research International**, [Amsterdam], v. 137, Nov. 2020. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0963996920303926>. Acesso em: 05 maio 2022.

BETTENHAUSEN, H. M. *et al.* Influence of malt source on beer chemistry, flavor, and flavor stability. **Food Research International**, [Amsterdam], v. 113, p. 487–504, Nov. 2018. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0963996918305623>. Acesso em: 07 maio 2022.

BLACKMORE, H. *et al.* The effect of implicit and explicit extrinsic cues on hedonic and sensory expectations in the context of beer. **Food Quality and Preference**, [Oxford], v. 81, n. 2, Apr. 2020. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329319305130>. Acesso em: 23 jun. 2022.

BLACKWELL, R. D.; MINIARD, P. W.; ENGEL, J. F. **Comportamento do consumidor**. São Paulo: Cengage Learning, 2009.

BLANCO, C. A. *et al.* A better control of beer properties by predicting acidity of hop iso- α -acids. **Trends in Food Science and Technology**, [London], v. 17, n. 7, p. 373-377, July 2006. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0924224405003468>. Acesso em: 07 jan. 2022.

BLYTHE, J. **Consumer behaviour**. 2nd ed. Londres: SAGE, 2013.

BOGDAN, P.; KORDIALIK-BOGACKA, E. Alternatives to malt in brewing. **Trends in Food Science and Technology**, [London], v. 65, p. 1-9, July 2017. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0924224416300930>. Acesso em: 15 fev. 2022.

BONGONI, R. *et al.* Studying consumer behaviour related to the quality of food: a case on vegetable preparation affecting sensory and health attributes. **Trends in Food Science and Technology**, [London], v. 33, n. 2, p. 139-145, Oct. 2013. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0924224413001799>. Acesso em: 23 dez. 2021.

BRAGANTE, A. G. **Desenvolvendo produtos alimentícios: Conceitos e metodologias**. São Paulo: Clube dos Autores, 2012.

BRASIL. Ministério da Agricultura, Pecuária e Abastecimento. **Instrução Normativa nº 65**. Brasília, DF: Ministério da Agricultura, Pecuária e Abastecimento, [2019]. Disponível em: <http://www.in.gov.br/en/web/dou/-/instrucao-normativa-n-65-de-10-de-dezembro-de-2019-232666262>. Acesso em: 23 jul. 2020.

BRIEN, S. E. *et al.* Effect of alcohol consumption on biological markers associated with risk of coronary heart disease: Systematic review and meta-analysis of interventional studies. **BMJ**, [London], v. 342, Feb. 2011. Disponível em: <https://www.bmj.com/content/342/bmj.d636>. Acesso em: 23 jul. 2020.

- BRIGGS, E. D. *et al.* **Brewing science and practice**. Boca Raton FL: Woodhead Publishing Limited and CRC Press LLC, 2004.
- BRINK, M. *et al.* **The contribution made by beer to the European economy**. Amsterdam, 2011. Disponível em: [https://brewersofeurope.org/uploads/mycms-files/documents/archives/publication\(1\).pdf](https://brewersofeurope.org/uploads/mycms-files/documents/archives/publication(1).pdf). Acesso em: 12 mar. 2020.
- BUDRONI, M. *et al.* Saccharomyces and non-saccharomyces starter yeasts. *In*: KANAUCHI, M. (ed.). **Brewing Technology**. London: IntechOpen, 2017.
- BURINI, J. A. *et al.* Levaduras no convencionales como herramientas de innovación y diferenciación en la producción de cerveza. **Revista Argentina de Microbiología**, [Buenos Aires], v. 53, n. 4, p. 359-377, oct./dic. 2021. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0325754121000109>. Acesso em: 29 mar. 2022.
- CALVO-PORRAL, C.; LEVY-MANGIN, J.-P. Situational factors in alcoholic beverage consumption: Examining the influence of the place of consumption. **British Food Journal**, [Bingley], v. 121, n. 9, p. 2086-2101, Aug. 2019. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-01-2019-0002/full/html>. Acesso em: 22 abr. 2022.
- CALVO-PORRAL, C.; OROSA-GONZÁLEZ, J.; BLAZQUEZ-LOZANO, F. A clustered-based segmentation of beer consumers: from "beer lovers" to "beer to fuddle. **British Food Journal**, [Bingley], v. 120, n. 8, p. 1280-1294, July 2018. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-11-2017-0628/full/html>. Acesso em: 13 nov. 2021.
- CARBONE, A.; QUICI, L. Craft beer mon amour: An exploration of Italian craft consumers. **British Food Journal**, [Bingley], v. 122, n. 8, p. 2671–2687, June 2020. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-07-2019-0476/full/html>. Acesso em: 13 nov. 2021.
- CARDELLO, A. V. *et al.* Cognitive and emotional differentiators for beer: An exploratory study focusing on “uniqueness”. **Food Quality & Preference**, [Oxford], v. 54, n. 1, p. 23-38, Dec. 2016. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329316301318>. Acesso em: 29 jan. 2022.
- CARVALHO, G. B. M. de; BENTO, C. V.; ALMEIDA e SILVA, J. B. de. Elementos biotecnológicos fundamentais no processo cervejeiro: 1ª Parte- As leveduras. **Revista Analytica**, Lorena, n. 25, p. 36-42, out./nov. 2006. Disponível em: https://edisciplinas.usp.br/pluginfile.php/4075236/mod_resource/content/1/Carvalho2006%20Artigo_Analitica_1_As_Leveduras.pdf. Acesso em: 18 fev. 2020.
- CARVALHO, G. B. M. de. **Obtenção de cerveja usando banana como adjunto e aromatizante**. 2009. 163 p. Tese (Doutorado em Biotecnologia Industrial) – Escola de Engenharia de Lorena, Universidade de São Paulo, Lorena, 2009.

CARVALHO, J. M. **A cerveja e a viabilidade tecnológica e nutricional do aproveitamento do resíduo de seu processamento: Revisão.** 2019. 32 p. Trabalho de Conclusão de Curso (Bacharelado em Engenharia de Alimentos) – Universidade Federal de Lavras, Lavras, 2019.

CARVALHO, N. B. *et al.* Characterization of the consumer market and motivations for the consumption of craft beer. **British Food Journal**, [Bingley], v. 120, n. 2, p. 378–391, Feb. 2018. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-04-2017-0205/full/html>. Acesso em: 03 jun. 2022.

CRUZ, J. M. M. Cerveja. *In*: FONSECA, M. M.; TEIXEIRA, J. A. (eds.). **Reactores Biológicos**. Lisboa: Lidel, 2007. p. 277-305.

DANTAS, V. N. **A trajetória da cultura cervejeira e sua introdução no Brasil.** 2016. 12 p. Trabalho de Conclusão de Curso (Bacharelado Interdisciplinar em Ciências Humanas) – Universidade Federal de Juiz de Fora, Juiz de Fora, 2016.

DARPY, D. **Comportements du consommateur.** Paris: Dunod, 2012.

DE GAETANO, G. *et al.* Effects of moderate beer consumption on health and disease: A consensus document. **Nutrition, Metabolism and Cardiovascular Diseases**, [Oxford], v. 26, n. 6, p. 443-467, June 2016. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/27118108/>. Acesso em: 07 jun. 2022.

DELLA LUCIA, S. M. *et al.* Expectativas geradas pela marca sobre a aceitabilidade de cerveja: Estudo da interação entre características não sensoriais e o comportamento do consumidor. **Boletim do Centro de Pesquisa e Processamento de Alimentos**, Curitiba, v. 28, n. 1, p. 11–24, jan./jun. 2010. Disponível em: https://www.researchgate.net/publication/273614296_EXPECTATIVAS_GERADAS_PELA_MARCA_SOBRE_A_ACEITABILIDADE_DE_CERVEJA_ESTUDO_DA_INTERACAO_ENTRE_CARACTERISTICAS_NAO_SENSORIAIS_E_O_COMPORTEAMENTO_DO_CONSUMIDOR. Acesso em: 19 dez. 2021.

DIAZ, L. E. *et al.* Influence of alcohol consumption on immunological status: A review. **European Journal of Clinical Nutrition**, [London], v. 56, n. 3, p. 50-53, Aug. 2002. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/12142963/>. Acesso em: 18 nov. 2021.

DONADINI, G. *et al.* Consumer interest in specialty beers in three European markets. **Food Research International**, [Amsterdam], v. 85, p. 301–314, July 2016. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0963996916301697>. Acesso em: 07 abr. 2022.

DONADINI, G.; PORRETTA, S. Uncovering patterns of consumers' interest for beer: A case study with craft beers. **Food Research International**, [Amsterdam], v. 91, p. 183–198, Jan. 2017. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0963996916305944>. Acesso em: 19 jun. 2022.

DUCRUET, J. *et al.* Amber ale beer enriched with goji berries – The effect on bioactive compound content and sensorial properties. **Food Chemistry**, [Oxford], v. 226, p. 109–118, July 2017. Disponível em:

<https://www.sciencedirect.com/science/article/abs/pii/S030881461730047X>. Acesso em: 18 fev. 2022.

EINFALT, D. Barley-sorghum craft beer production with *Saccharomyces cerevisiae*, *Torulaspora delbrueckii* and *Metschnikowia pulcherrima* yeast strains. **European Food Research and Technology**, [New York], v. 247, p. 385–393, Feb. 2021. Disponível em: <https://link.springer.com/article/10.1007/s00217-020-03632-7>. Acesso em: 20 fev. 2022.

ELZINGA, K. G.; TREMBLAY, C. H.; TREMBLAY, V. J. Craft beer in the United States: History, numbers, and geography. **Journal of Wine Economics**, [Cambridge], v. 10, n. 3, p. 242–274, Dec. 2015. Disponível em: https://www.researchgate.net/publication/285672596_Craft_Beer_in_the_United_States_History_Numbers_and_Geography. Acesso em: 01 jul. 2022.

ENGEL, J. F.; BLACKWELL, R. D.; MINIARD, P. W. **Comportamento do consumidor**. 8. ed. Rio de Janeiro: Editora S.A., 1999.

FOX, G. P. Chemical composition in barley grains and malt quality. *In*: ZHANG, G.; LI, C. (eds.). **Advanced topics in science and technology in China advanced topics**. Heidelberg: Springer-Verlag, 2010. p. 63–98.

GALLONE, B. *et al.* Domestication and divergence of *Saccharomyces cerevisiae* beer yeasts. **Cell**, [Cambridge], v. 166, n. 6, p. 1397–1410, Sept. 2016. Disponível em: [https://www.cell.com/fulltext/S0092-8674\(16\)31071-6](https://www.cell.com/fulltext/S0092-8674(16)31071-6). Acesso em: 15 dez. 2021.

GARAVAGLIA, C.; SWINNEN, J. Economics of the craft beer revolution: A comparative international perspective. *In*: GARAVAGLIA, C.; SWINNEN, J. (eds.). **Economic perspectives on craft beer: A revolution in the global beer industry** London: Palgrave Macmillan, 2018. p. 3–51.

GIL-PÉREZ, I. *et al.* Hot or not? Conveying sensory information on food packaging through the spiciness-shape correspondence. **Food Quality and Preference**, [Oxford], v. 71, p. 197–208, Jan. 2019. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329318303525>. Acesso em: 05 maio 2022.

GOMEZ-CORONA, C. *et al.* Craft vs. industrial: Habits, attitudes and motivations towards beer consumption in Mexico. **Appetite**, [London], v. 96, p. 358–367, Jan. 2016. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0195666315300532>. Acesso em: 01 jul. 2022.

GÓMEZ-CORONA, C. *et al.* Measuring the drinking experience of beer in real context situations. The impact of affects, senses, and cognition. **Food Quality and Preference**, [Oxford], v. 60, p. 113–122, Sept. 2017. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329317300861>. Acesso em: 02 mar. 2022.

GUINARD, J.-X. *et al.* Sensory determinants of the thirst-quenching character of beer. **Appetite**, [London], v. 31, n. 1, p. 101-115, Aug. 1998. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0195666398901659>. Acesso em: 02 mar. 2022.

HAYWARD, L.; WEDEL, A.; McSWEENEY, M. B. Acceptability of beer produced with dandelion, nettle, and sage. **International Journal of Gastronomy and Food Science**, [Amsterdam], v. 18, Dec. 2019. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S1878450X19301088>. Acesso em: 02 jul. 2020.

HOLT, S. *et al.* Bioflavoring by non-conventional yeasts in sequential beer fermentations. **Food Microbiology**, [London], v. 72, p. 55–66, June 2018. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/29407405/>. Acesso em: 01 jul. 2020.

HUMIA, B. V. *et al.* Beer molecules and its sensory and biological properties: A review. **Molecules**, [Basel], v. 24, n. 8, Apr. 2019. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/31009997/>. Acesso em: 23 fev. 2020.

HUMIA, B. V. *et al.* Physicochemical and sensory profile of Beauregard sweet potato beer. **Food Chemistry**, [Oxford], v. 312, May 2020. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0308814619322368>. Acesso em: 15 mar. 2020.

JAEGER, S. R. *et al.* Effects of “craft” vs. “traditional” labels to beer consumers with different flavor preferences: A comprehensive multi-response approach. **Food Quality and Preference**, [Oxford], v. 87, Jan. 2021. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329320303128>. Acesso em: 18 mar. 2022.

JAEGER, S. R. *et al.* Holistic and consumer-centric assessment of beer: A multi-measurement approach. **Food Research International**, [Amsterdam], v. 99, p. 287-297, Sept. 2017. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/28784485/>. Acesso em: 23 fev. 2020.

JAEGER, S. R. *et al.* Preference segments among declared craft beer drinkers: Perceptual, attitudinal and behavioral responses underlying craft-style vs. traditional-style flavor preferences. **Food Quality and Preference**, [Oxford], v. 82, June 2020. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329319309292>. Acesso em: 22 fev. 2022.

KOTLER, P. **Administração de Marketing**: A edição do novo milênio. São Paulo: Prentice Hall, 2000.

LEE, L.; FREDERICK, S.; ARIELY, D. Try it, you’ll like it: the influence of expectation, consumption and revelation on preferences for beer. **Psychological Science**, [United States], v. 17, n. 12, p. 1054-1058, Dec. 2006. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/17201787/>. Acesso em: 07 jun. 2022.

LUCCHESI, T.; BATALHA, M. O.; LAMBERT, J. L. Marketing de alimentos e o comportamento de consumo: Proposição de uma tipologia de consumidor de produtos light e/ou diet. **Organizações Rurais & Agroindustriais**, Lavras, v. 8, n. 2, p. 227-239, ago. 2006. Disponível em: <http://revista.dae.ufla.br/index.php/ora/article/view/171>. Acesso em: 12 mar. 2022.

MADEIRA, J. S. **Perfil do consumidor de cervejas especiais. Uma contribuição para o estudo do consumo nas ciências sociais**. 2015. 80 p. Monografia (Graduação em Ciências Sociais) – Universidade Estadual de Campinas, Campinas, 2015.

MALONE, T.; LUSK, J. L. If you brew it, who will come? Market segments in the US beer market. **Agribusiness**, [Hoboken], v. 34, n. 2, p. 204-221, June 2018. Disponível em: <https://onlinelibrary.wiley.com/doi/abs/10.1002/agr.21511>. Acesso em: 18 abr. 2022.

MASTANJEVIC, K. *et al.* From malt to wheat beer: A comprehensive multi-toxin screening, transfer assessment and its influence on basic fermentation parameters. **Food Chemistry**, [Oxford], v. 254, p. 115–121, July 2018. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/29548430/>. Acesso em: 18 abr. 2022.

MATOS, R. A. G. **Cerveja: Panorama do mercado, produção artesanal e a avaliação de aceitação e preferência**. 2011. 78 p. Monografia (Graduação em Engenharia Agrônoma) – Universidade Federal de Santa Catarina, Florianópolis, 2011.

MAYER, S.; LACHENMEIER, D. W. The trend of reduced hop-content in Pilsnertype beer in Germany. A change in taste? **Journal of the Institute of Brewing**, [London], v. 121, n. 1, p. 28-30, Jan. 2015. Disponível em: <https://onlinelibrary.wiley.com/doi/full/10.1002/jib.188>. Acesso em: 12 jun. 2022.

MEGA, J. F.; NEVES, E.; ANDRADE, C. J. de. A produção da cerveja no Brasil. **Revista Hestia Citino**, Joinville, v. 1, n. 1, p. 21-29, out./dez. 2011. Disponível em: <https://docplayer.com.br/3055817-Revisao-a-producao-da-cerveja-no-brasil.html>. Acesso em: 12 jan. 2021.

MEJLHOLM, O.; MARTENS, M. Beer identity in Denmark. **Food Quality and Preference**, [Oxford], v. 17, n. 1-2, p. 108-115, Jan./Mar. 2006. Disponível em: <https://www.infona.pl/resource/bwmeta1.element.elsevier-f70890a0-ae48-3292-871f-e90d4344d41d>. Acesso em: 02 abr. 2022.

MELEWAR, T. C.; SKINNER, H. Territorial brand management: Beer, authenticity, and sense of place. **Journal of Business Research**, [New York], v. 116, p. 680-689, Aug. 2020. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0148296318301668>. Acesso em: 11 jan. 2022.

MEYERDING, S. G. H.; BAUCHROWITZ, A.; LEHBERGER, M. Consumer preferences for beer attributes in Germany: A conjoint and latent class approach. **Journal of Retailing and Consumer Services**, [United Kingdom], v. 47, p. 229–240, Mar. 2019. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S096969891830448X>. Acesso em: 18 mar. 2022.

MORADO, R. **Larousse da Cerveja**. 1. ed. São Paulo: Larousse do Brasil, 2011.

MURRAY, D. W.; O'NEILL, M. A. Craft beer: Penetrating a niche Market. **British Food Journal**, [Bingley], v. 114, n. 7, p. 899–909, June 2012. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/00070701211241518/full/html>. Acesso em: 13 fev. 2022.

NARDI, R. G. **Comportamento do consumidor: Análise dos consumidores de cerveja artesanal nas cidades de Lajeado, Estrela e Teutônia/RS**. 2018. 57 p. Trabalho de Conclusão de Curso (Bacharelado em Administração de Empresas) – Universidade do Vale do Taquari, Lajeado, 2018.

NIELD, K.; PEACOCK, G. Competition in the U.K. beer market: further intervention in the U.K. beer market may produce a brand oriented market at the expense of competition and consumer choice. **International Journal of Hospitality Management**, [United Kingdom], v. 14, n. 2, p. 103-106, June 1995. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/0278431995000155?via%3Dihub>. Acesso em: 02 mar. 2022.

OBARA, K. *et al.* Isohumulones, the bitter component of beer, improve hyperglycemia and decrease body fat in Japanese subjects with prediabetes. **Clinical Nutrition**, [Edinburgh], v. 28, n. 3, p. 278-284, June 2009. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/19395131/>. Acesso em: 07 abr. 2022.

OLADOKUN, O. *et al.* Modification of perceived beer bitterness intensity, character and temporal profile by hop aroma extract. **Food Research International**, [Amsterdam], v. 86, p. 104-111, Aug. 2016. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0963996916302046>. Acesso em: 18 abr. 2022.

OLIVEIRA NETO, J. R. *et al.* Antioxidant and vasodilatory activity of commercial beers. **Journal of Functional Foods**, [Amsterdam], v. 34, p. 130–138, July 2017. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S1756464617302098>. Acesso em: 22 nov. 2021.

OLIVER, G.; COLICCHIO, T. **The Oxford companion to beer**. New York: Oxford University Press, 2011.

PALMER, J.; KAMINSKI, C. **Água: Um guia completo para fabricantes de cerveja**. 1. ed. Porto Alegre: Krater, 2021.

PAPAZIAN, C. **The complete joy of homebrewing**. 4th ed. New York: Willian Morrow & Company, 2014.

PARKER, D. *et al.* British beer styles. Where are they heading? **British Food Journal**, [Bingley], v. 122, n. 1, p. 60–74, Jan. 2020. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-12-2018-0842/full/html>. Acesso em: 15 maio 2022.

PAULA, S. C. S. E. de *et al.* The influence of musical song and package labeling on the acceptance and purchase intention of craft and industrial beers: A case study. **Food Quality and Preference**, [Oxford], v. 89, Apr. 2021. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329320304080>. Acesso em: 15 maio 2022.

PINTO, L. C. *et al.* Determinação do valor nutritivo de derivados de levedura de cervejaria (*Saccharomyces spp.*). **Revista Brasileira de Produtos Agroindustriais**, Campina Grande, v. 15, n. 1, p. 7-17, mar. 2013. Disponível em: https://www.researchgate.net/publication/277939630_Determinacao_do_valor_nutritivo_de_derivados_de_levedura_de_cervejaria_Saccharomyces_spp. Acesso em: 03 abr. 2022.

POKRIVČÁK, J. *et al.* Development of beer industry and craft beer expansion. **Journal of Food and Nutrition Research**, [Amsterdam], v. 58, n. 1, p. 63–74, Jan. 2019. Disponível em: <https://www.cabdirect.org/globalhealth/abstract/20193273777>. Acesso em: 06 jun. 2022.

POLI, A. *et al.* Moderate alcohol use and health: A consensus document. **Nutrition, Metabolism and Cardiovascular Diseases**, [Oxford], v. 23, n. 6, p. 487-504, June 2013. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/23642930/>. Acesso em: 05 jan. 2022.

PUNCOCHAROVA, L.; PORIZKA, J.; DIVIS, P. Study of the influence of brewing water on selected quantitative beer indicators and on content of B vitamins. *In: INTERNATIONAL PHD STUDENTS CONFERENCE FOR UNDERGRADUATE AND POSTGRADUATE STUDENTS*, 25., 2018, Brno. **Anais eletrônicos [...]**. Brno, 2018. Disponível em: <https://mendelnet.cz/pdfs/mnt/2018/01/62.pdf>. Acesso em: 12 fev. 2020.

REBELLO, F. de F. P. Produção de cerveja. **Revista Agrogeoambiental**, Inconfidentes, v. 1, n. 3, p. 145-155, dez. 2009. Disponível em: <https://agrogeoambiental.ifsuldeminas.edu.br/index.php/Agrogeoambiental/article/view/224>. Acesso em: 07 nov. 2021.

REBOLLAR, R. *et al.* How material, visual and verbal cues on packaging influence consumer expectations and willingness to buy: The case of crisps (potato chips) in Spain. **Food Research International**, [Amsterdam], v. 99, p. 239-246, Sept. 2017. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0963996917302272>. Acesso em: 07 nov. 2021.

REITENBACH, A. F. **Desenvolvimento de cerveja funcional com adição de probiótico: *Saccharomyces boulardii***. 2010. Dissertação (Mestrado em Engenharia de Alimentos) - Universidade Federal de Santa Catarina, Florianópolis, 2010.

REZENDE, D. C. de; AVELAR, A. E. S. de. Factors that influence the consumption off food outside the home in Brazil. **International Journal of Consumer Studies**, London, v. 36, n. 3, p. 300-306, May 2012. Disponível em: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1470-6431.2011.01032.x>. Acesso em: 12 abr. 2021.

RIVAROLI, S.; CALVO-PORRAL, D.; SPADONI, R. Using food choice questionnaire to explain Millennials' attitudes towards craft beer. **Food Quality and Preference**, [Oxford], v. 96, Mar. 2022. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329321002901>. Acesso em: 29 jun. 2022.

RIVAROLI, S.; HINGLEY, M. K.; SPADONI, R. The motivation behind drinking craft beer in Italian brew pubs: A case study. **Economia Agro-Alimentare**, [Italy], v. 20, n. 3, p. 425-443, Sept. 2018. Disponível em: <https://ideas.repec.org/a/fan/ecaqec/vhtml10.3280-ecag2018-003009.html>. Acesso em: 29 jun. 2022.

ROSALES, A. *et al.* Craft beer vs industrial beer: Chemical and sensory differences. **British Food Journal**, [Bingley], v. 123, n. 12, p. 4332-4346, Nov. 2021. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-01-2021-0074/full/html>. Acesso em: 25 jun. 2022.

SAKAMOTO, K.; KONINGS, W. N. Beer spoilage bacteria and hop resistance. **International Journal of Food Microbiology**, [Amsterdam], v. 89, n. 2-3, p. 105-124, Dec. 2003. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/14623377/>. Acesso em: 18 abr. 2021.

SANNA, V.; PRETTI, L. Effect of wine barrel ageing or sapa addition on total polyphenol content and antioxidant activities of some Italian craft beers. **International Journal of Food Science & Technology**, [Malden], v. 50, n. 3, p.700-707, Mar. 2015. Disponível em: <https://ifst.onlinelibrary.wiley.com/doi/abs/10.1111/ijfs.12666>. Acesso em: 02 dez. 2021.

SANTOS, S. P. **Os primórdios da cerveja no Brasil**. 2. ed. Cotia: Ateliê Editorial, 2003.

SCHABO, D. C. *et al.* Production of aflatoxin B1 and B2 by *Aspergillus flavus* in inoculated wheat using typical craft beer malting conditions. **Food Microbiology**, [London], v. 89, Aug. 2020. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0740002020300459>. Acesso em: 18 jan. 2022.

SCHÖNBERGER, C.; KOSTELECKY, T. 125th Anniversary review: The role of hops in brewing. **Journal of the Institute of Brewing**, [London], v. 117, n. 3, p. 259-267, Jan. 2011. Disponível em: <https://onlinelibrary.wiley.com/doi/10.1002/j.2050-0416.2011.tb00471.x>. Acesso em: 25 abr. 2022.

SILVA, A. P. *et al.* What's in a name?: The effect of congruent and incongruent product names on liking and emotions when consuming beer or non-alcoholic beer in a bar. **Food Quality & Preference**, [Oxford], v. 55, n. 1, p. 58-66, Jan. 2017. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329316301707>. Acesso em: 18 abr. 2021.

SILVA, C. H. P. M. **Microbiologia da cerveja**. São Paulo: Editora Livraria da Física, 2019.

SILVA, S. A. da. **Contaminantes microbianos no processo de produção de cerveja**. 2017. 41 p. Trabalho de Conclusão de Curso (Especialização em Microbiologia) – Universidade Federal de Minas Gerais, Belo Horizonte, 2017.

SPÁČIL, V.; TEICHMANNOVÁ, A. Intergenerational analysis of consumer behaviour on the beer market. **Procedia - Social and Behavioral Sciences**, [Amsterdam], v. 220, p. 487-495, May 2016. Disponível em: <https://www.sciencedirect.com/science/article/pii/S1877042816306255>. Acesso em: 05 abr. 2021.

SPAGGIARI, G. *et al.* To beer or not to beer: A meta-analysis of the effects of beer consumption on cardiovascular health. **PLoS ONE**, [San Francisco], v. 15, n. 6, June 2020. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7269243/>. Acesso em: 09 jun. 2022.

SPENCE, C. *et al.* On tasty colours and colourful tastes? Assessing, explaining, and utilizing crossmodal correspondences between colours and basic tastes. **Flavour**, [London], v. 4, n. 23, July 2015. Disponível em: <https://flavourjournal.biomedcentral.com/articles/10.1186/s13411-015-0033-1>. Acesso em: 18 abr. 2022.

THONG, N. T. *et al.* The role of packaging format, alcohol level and brand in consumer's choice of beer: A best-worst scaling multi-profile approach. **Food Quality and Preference**, [Oxford], v. 65, p. 92–100, Apr. 2018. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0950329317302859>. Acesso em: 09 jun. 2022.

THURNELL-READ, T. 'Real ale' enthusiasts, serious leisure and the costs of getting 'too serious' about beer. **Leisure Sciences**, [London], v. 38, n. 1, p. 68–84, Jan. 2016. Disponível em: <https://www.tandfonline.com/doi/abs/10.1080/01490400.2015.1046618>. Acesso em: 27 abr. 2022.

TOZETTO, L. M. **Produção e caracterização de cerveja artesanal adicionada de gengibre (*Zingiber officinale*)**. 2017. 80 p. Dissertação (Mestrado em Engenharia de Produção) – Universidade Tecnológica Federal do Paraná, Ponta Grossa, 2017.

VAN DONKELAAR, L. H. G. *et al.* The use of enzymes for beer brewing: Thermodynamic comparison on resource use. **Energy**, [Oxford], v. 115, p. 519-527, Nov. 2016. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0360544216312518>. Acesso em: 12 fev. 2020.

VENTURINI FILHO, W. G. **Tecnologia de cerveja**. Jaboticabal: Funep, 2000.

VIEIRA, A. W. **Apostila de produção de cervejas artesanais**. São Paulo: Acerva Paulista, 2009.

VILLACRECES, S.; BLANCO, C. A.; CABALLERO, I. Developments and characteristics of craft beer production processes. **Food Bioscience**, [Amsterdam], v. 45, Feb. 2022. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S2212429221006209>. Acesso em: 01 jul. 2022.

ZANETTA, L. D. *et al.* Hedonic, emotional and willingness-to-pay response to beers of a different type in Brazil. **British Food Journal**, [Bingley], v. 123, n. 1, p. 87–107, Jan. 2021. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/BFJ-02-2020-0137/full/html>. Acesso em: 03 jul. 2022.

WILLIAMS, C. A.; BARRETTA, P. G. Beer purchase decisions and consumption behavior. **BRC Journal of Advances in Business**, [New York], v. 3, n.1, p. 51-72, Mar. 2018. Disponível em: <https://www.cambriainstitute.com/journals/j.brcadvjb.2018.03.01.ja04.pdf>. Acesso em: 21 maio 2022.

YAHYA, H.; LINFORTH, R. S. T.; COOK, D. J. Flavour generation during commercial barley and malt roasting operations: A time course study. **Food Chemistry**, [Oxford], v. 145, p. 378-387, Feb. 2014. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0308814613011187>. Acesso em: 11 maio 2022.

YAN, D. *et al.* Assessment of the phytochemical profiles of novel hop (*Humulus lupulus* L.) cultivars: A potential route to beer crafting. **Food Chemistry**, [Oxford], v. 275, p. 15–23, Mar. 2019. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0308814618316534>. Acesso em: 19 dez. 2021.

SEGUNDA PARTE – ARTIGOS**ARTIGO 1 - SPECIALTY BEERS MARKET: A COMPARATIVE STUDY OF
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Specialty beers market: a comparative study of producers and consumers behavior

Beer producers and consumers' behavior

Abstract

Purpose: This study aimed to identify, with producers of specialty beers (SBs), producers' perceptions regarding the consumers, besides analyzing the consumer's behavior of SBs regarding consumers' preferences, perceptions and determining buying factors.

Methodology: In the qualitative analysis, interviews were performed with 14 professionals from the SB industry. In the quantitative study, 301 consumers of SB answered a questionnaire about preferences, perception and determining buying factors of special beer. Techniques such as content analysis, frequency analysis, cross-tabulation and hierarchical cluster analysis were used in this study.

Findings: The study demonstrated an important convergence in the perceptions of producers about consumers, and the real behavior of SB consumers, mainly on factors of beer packaging, label, style and price. Those respondents consuming just SB were characterized by having higher income, frequency and time of beer consumption and willingness to pay more for the product. Cluster analysis allowed to segment respondents into three groups: (1) beginners in the universe of SBs who also drink commercial beers; (2) regular consumers willing to pay more for SB; and (3) legitimate consumers of SB averse to commercial beer.

Originality: By addressing professionals and consumers, this study generated scientific information and knowledge to assist the specialty brewing industry in developing new products and defining marketing strategies as well as creating actions for bringing producers and consumers closer together to benefit both parties.

KEYWORDS: behavior, brewing, consumer, craft beer.

1 INTRODUCTION

Beer, an alcoholic beverage obtained from the wort fermentation process from malted cereal and grains (especially barley), yeast, water and hops (Albanese *et al.*, 2018; Humia *et al.*, 2019; Santos *et al.*, 2021), is one of the world's oldest and most popular alcoholic beverages, with its origins dating back over 9,000 years ago (Morado, 2011; Gallone *et al.*, 2016). The beverage is highly consumed around the world, but, in recent years, aspects related to ingredients, production and consumption have been changing. Specialty beers (SB) or craft beers, already established in many countries, have gained space and inserts itself as the favorite beverage by a portion of consumers (Murray and O'Neill, 2012). This fact may be explained by the different aromas and flavors, the superior quality of ingredients and processes and the great care taken in its preparation, generating a high-quality final product when compared to commercial beer, the beer category dominated by a single style, lager, for a long time (Aquilani *et al.*, 2015; Gómez-Corona *et al.*, 2016b).

In the well-established markets, as North America and Europe, there is an increasing consumption of craft beer in detriment of commercial beer (Rosales *et al.*, 2021). Specialty beer consumers are increasingly focused on variety, and producers have necessity to respond facing a competitive market. The demand trend in favor of specialty (artisanal or craft) beer now appears well consolidated, while the so-called “home-based craft production-consumption activity” became trendy (Elliot, 2016; Carbone and Quici, 2020). Thus, many brewers have responded to this trend by broadening their portfolio of production (Parker *et al.*, 2020), and knowing the different consumers of their different products can be essential for a correct market segmentation. Gómez-Corona *et al.* (2016a) developed a research using consumer ethnographies to understand the benefits and motivations of beer consumption in Mexico, suggesting that beer consumers could be classified as “industrial”, “occasional industrial” and “craft beer” consumers.

Specialty (or craft) beer consumers can be differentiated from traditional (or mainstream) beer consumers on the basis of several characteristics, in addition to the possibility of personal differences shown among them. Among these are their demographic profiles, their preferences for certain styles and flavors of beer and the product-related behaviors they often exhibit toward beers (Jaeger *et al.*, 2020). Consumer-based variables could be used in order to differentiate consumer segments (Cardello *et al.*, 2016; Calvo-Porrá *et al.*, 2018) and, therewith, different categories of SB consumers can be formed. In view of several surveys with general beer consumers, what can be said only about SB consumers? Do SB producers really know the consumers of their products and their preferences in relation to SBs?

Thus, there is a need for studies on producers, traders, and consumers of the beverage industry due to the constant growth on production and consumption of SB. It is important to investigate the perceptions of beer professionals about consumers to add knowledge to the chain.

The growing number of consumers of SB raises the need to understand the factors influencing purchase behavior, preference, and perceptions of the product. Besides that, in the face of the growth and diversification of the consumer market, the solution is evaluating the different kinds of behavior and the features of the different categories of SB consumers. Thus, there is a complete evaluation between the real behavior of consumers and what producers think about consumers.

The contribution of this research is wide and provides a basis for future researchers to further develop this research area, as consumer-focused surveys are key tools of marketing analysis. Data and information of this study involving brewing professionals and consumers, the first in the academic inquiry, and the observation of different SB consumer groups generate scientific information and knowledge that assist the specialty brewing industry in

developing new products according to the specific consuming public, modifying labels/packaging and defining marketing strategies as well as creating strategies for bringing producers and consumers closer together to benefit both parties (Carvalho *et al.*, 2018). The industry manages to direct its production of SBs according to the perception and determining factors in the purchase made by consumers, while different consumers will always find beers that satisfy their needs and desires when buying and consuming a SB.

Therefore, the aims of this study was (1) identify, with producers from the brewing industry, their perceptions regarding the behavior of special beer consumers related to the style, packaging, label, and price of specialty beers, characteristics of these consumers and obtaining information regarding beers; (2) analyze the behavior of different categories of SB consumers regarding their preferences, perceptions and determining buying factors; and (3) compare producers and consumers perceptions and behaviors.

2 LITERATURE REVIEW

2.1 Premium products

The constant change in the level of education, access to information and income of the population has led to important changes in the food and beverages sector. Among them, the consumption trend regarding sensoriality and pleasure has increased the demand for ‘gourmet’ and ‘premium’ products. Consumer innovativeness refers to the predisposition to buy new and different products rather than remaining with previous choices and consumption patterns (Steenkamp *et al.*, 1999; Makrides *et al.*, 2021).

In fact, the demand for product innovation is ongoing (Santeramo *et al.*, 2018), and consumer segments of higher value-added products have grown both about ‘gourmet’ and ‘premium’ products, which generally aimed at the high-income population as well as

sophisticated foods that are affordable for emerging consumers (Food Technology Institute, 2020).

In this sense, a consumer's demands for quality and social habits contributed the emergence of 'premium beverages', leading to an increase in the consumption of special beers (Carvalho *et al.*, 2018; Zanetta *et al.*, 2021).

2.2 Beer and consumer behavior

Food and beverage industries seek to develop products that meet the needs of consumers. Thus, beers must present style, packaging, label and price, among other attributes, that satisfy the consumers. According De Paula *et al.* (2021), consumers are influenced by sensory characteristics (appearance, aroma, flavor and texture) resulting from the balance of compounds in foods and also by non-sensory characteristics which include product-extrinsic information such as brand, price, product origin, color and illustrations stamped on the label and several other factors, such as those related to the consumer itself.

About beer, Aquilani *et al.* (2015) and Zanetta *et al.* (2021) reported that some factors have been shown to affect the beer choices such as price, brand, distribution, differentiation and packaging, contributing to consumer choice. A significant body of knowledge is now emerging, which investigates the role of consumer characteristics, patronage and other behavioral actions (Arum *et al.*, 2021).

Regarding the non-sensory characteristics, many studies have been carried out with the objective of evaluating the effects of packaging attributes on consumer behavior, since this is relevant when selecting a product (Carneiro *et al.*, 2018). In Brazil, studies assess consumer behavior and preferences in relation to sensory and non-sensory attributes (such as packaging and labels of SBs), citing Carvalho *et al.*, (2018), Jardim *et al.*, (2018), De Paula *et al.* (2021) and Santos *et al.*, (2021). However, analyzing the relationship between what the producer

thinks about the consumer and how the consumer actually behaves is still a gap to be explored.

2.3 Segmentation in brewery sector

New trends are emerging in the brewery sector, such as the increase of beer consumption at home, the increase of the awareness of beer quality among consumers, a higher demand for new flavors and varieties and the increasing demand for craft and SBs (Aquilani *et al.*, 2015; Calvo-Porrall *et al.*, 2018). As a consequence, there was a segmentation of the brewing sector, since different groups of consumers have different consumption characteristics. Thus, segmentation analysis helps to account for consumer heterogeneity in product acceptability and strengthens interpretations of results (Jaeger *et al.*, 2019).

Some studies were conducted on consumer segmentation in the brewery sector, offering different profiles of beer consumers. Using ethnographic criteria of beer consumers, Gómez-Corona *et al.* (2016a) observed that the segmentation of consumer groups was formed based on the type of beer consumed (craft x commercial); Calvo-Porrall *et al.* (2018) found five distinct groups of beer consumers with variations mainly in gender, age and frequency of consumption; Cardello *et al.* (2016) using consumer-based variables as order to differentiate consumer segments, such as product loyalty, product image, perceived quality and purchase intention, noting that consumers characterized beers by attitudinal, situational and emotional measures, showed each of the variables to be important differentiators.

Similarly, prior research on the topic supports that factors affecting beer choice and consumption, subsidizing the brewery sector segmentation, could belong in different categories such as the consumer-based attributes, product-based attributes and factors related to the purchasing and consumption situation (Aquilani *et al.*, 2015; Calvo-Porrall *et al.*, 2018).

3 MATERIALS AND METHODS

Data from 2017 pointed out Brazil as the 3rd largest beer producer in the world, behind China and the United States of America (Kirin Beer University, 2018). Data from the Ministry of Agriculture, Livestock and Supply (MAPA) showed in 2020, 204 new breweries registered in Brazil, totaling 1,383 registered breweries in the country. Minas Gerais is the third state with the most registered breweries (Brazil, 2021); therefore, it was the defined region for the research.

The study was approved by the local Human Research Ethics Committee, with permission through Certificate of Presentation of Ethical Appreciation CPEA 26389519.4.0000.5148 and CPEA 38745920.2.0000.5148. The research was conducted between March, 2019 and September, 2021 with unpaid participants.

3.1 Qualitative analysis – producers of specialty beers

A qualitative descriptive study was performed to interview 14 producers of SB industry in the state of Minas Gerais. The sampling was defined as non-probability sampling for convenience in which the elements were selected for their convenience or by volunteering, as described by Aaker, Kumar and Day (2001) and Emerson (2015).

Data were collected using a semi-structured interview script. The number of respondents was delimited by the saturation criteria, which is a criterion of suspending data collection at the moment when the addition of information to the research does not change the understanding of the phenomenon under study (Guerra, 2006; Antonialli, Rezende and Carneiro, 2018).

Data analysis and interpretation was performed using the content analysis, which consists of a set of communication analysis techniques that use systematic procedures and objective description of message content, seeking to overcome uncertainty and enrich the

reading, using Microsoft Excel software. Content analysis was developed in three phases, according to Bardin (2010): (1) pre-analysis, to establish the first contact with the results; (2) material exploration, a long phase which included coding tasks and (3) data processing, inference and interpretation validated the data.

The interview script consisted of 16 questions divided into 8 themes: determining factors at the time of purchase; beer style; beer packaging; beer labeling; beer price; beer consumer characteristics; special beer versus commercial beer and suggestions for future studies.

3.2 Quantitative analyses – specialty beers consumers

In this stage, a quantitative study was carried out to analyze the behavior of Minas Gerais consumers of SB regarding preferences, perceptions and determining factors when purchasing this product, using the same topics discussed with professionals in the brewing industry.

The respondents ($n = 301$) were consumers of SB born or residing in the state of Minas Gerais. Data collection was carried out through an online questionnaire available by e-mail, social media and cell phone applications. Online data collection offers advantages such as quick data collection and recording, as well as reduced cost when compared to other types of research (Eldesouky, Pulido and Mesias, 2015). The number of participants ($n = 301$) followed the criteria described by Hair *et al.* (2005) that for each predictive variable of the questionnaire, a minimum of 5 respondents is necessary. As the questionnaire contained 20 predictor variables, the minimum number expected was 100 respondents. Control questions were used at the beginning of the questionnaire, with exclusion criteria being less than 18 years old, not being consumer of SB, not being born and not residing in Minas Gerais. This stage of the study also used a non-probability sampling for convenience (Emerson, 2015).

Data were analyzed using descriptive statistics (frequency analysis and cross-tabulation) and multivariate statistics (hierarchical cluster analysis). The cluster analysis used sociodemographic variables, consumption behavior variables and associations between special and commercial beers, and a hierarchical cluster was used by the Ward Method (Ward, 1963). In addition, a chi-square analysis considering significance level of 5% was realized. The software used in the analysis was IBM® SPSS® Statistics 28.0.1 (International Business Machine, Statistical Package for the Social Science). Cluster analysis was performed, using, as a criterion for segmentation, the cross-tabulation between the groups and the predictor variables themselves, by the chi-square test.

4 RESULTS AND DISCUSSION

4.1 Qualitative study – producers of specialty beers

The answers obtained at this study stage describe the perception that SB producers have in relation to consumers.

4.1.1 Determining factors at the time of purchase

The most frequently pointed out determining factors by respondents when buying beer were style, price and label of beer. As part of the beer buying process, consumers make their decisions based on extrinsic attributes, such as price, alcohol and brand as well as intrinsic attributes, such as aroma, bitterness and carbonation (Meyerding *et al.*, 2019).

Beer style is a strong influencing factor at the time of purchase. The growing number of breweries producing SB results in new styles, and among the beer ingredients, there is a great variability of malt and hops both in quality aspects and contents added during the preparation of the product.

4.1.2 Beer style

Regarding the style of beer, all respondents believed that it interfered in the purchase, highlighting responses relating to consumer curiosity and choice of a new style of beer, as answers below:

[...] because the consumer of specialty beers no longer seeks the same, but is thirsty for new beers. Although they end up not liking the style, at least one should consume one unit, at least out of curiosity. Respondent 5

In a study conducted in Germany, Meyerding, Bauchrowitz and Lehberger (2019) analyzed the preferences of beer consumers regarding product attributes. Beer style was the most important attribute in the process of beer selection by consumers.

Another factor observed by the respondents was the relationship between the preference for a style and the context (occasion) of consumption of SB. In various segments, the relationship between the consumption of gourmet/premium food and beverages and the occasion of this consumption was observed. Similarly, beer is also consumed on occasions, as demonstrated by Nardi (2018), in which consumers prefer drinking Pilsner or Pale Ale beers in pubs, with consumption of beers in emporiums or specialty stores the last in consumer preference. As the occasion of consumption is part of the sub-decisions regarding the intention to buy by a brand (Kotler and Keller, 2012), it is also present when choosing a beer style.

Among the styles most consumed by consumers of SB, according to respondents, were India Pale Ale (IPA), Pilsner and American Lager.

4.1.3 Packaging of beer

All the respondents believed that packaging interfered in the purchase of SB. The main features of the packaging identified as the influencing factors were the material, size (volume of beer), color and shape.

Donadini and Porreta (2017) showed that packaging had an influence on consumer preferences of SBs in Italy. In this study, the authors argued that white beer bottles had positive effects on consumer acceptance, while cans had negative effects on the interest of Italian beer consumers.

Packaging affects attention, understanding of value, perception of product functionality as well as consumption, with important consequences for responses and consumer experience. The packaging should highlight the product and inform the consumer about brand authenticity, tradition, origin and quality. Packaging affects the emotional aspect, associating a lifestyle that connects to the occasion for which the consumer is buying the product (Roncarelli and Ellicott, 2010; Krishna, Cian, and Aydinoglu, 2017).

4.1.4 Beer labeling

Questions were asked regarding the special beer labels. When asked if the beer's front label style could interfere at the time of purchase, all respondents agreed, especially regarding colors and images, as follows:

Yes. Because it is the first thing that the consumer sees, who does not know about the product. He comes across the bottle and makes the choice to whether buy it or not, depending on the information on the label. Respondent 1

Subramanian (2017) stated that there are some features used in packaging to bring customers closer. The graphic label design enables to post messages that encourage consumers to buy the product, while the physical design adds convenience to distribution, handling, stacking, opening, closing, reusing, recycling and ease of disposal.

Most respondents also stated that the presence of additional information on beer labels may influence consumers at the time of purchase, such as drinking temperature, drinking tips, special ingredients and technical information about product quality.

Regarding the degree of importance that some information may have when presented on the special beer labels, the interviewees considered alcohol content, bitterness [International Bitterness Unit IBU] and the term “pure malt” as very important; product or company sustainability and beer award seal as important and coloration [European Brewing Convention EBC], malt type, hop type, water source, and proper yeast cultivation/selection as unimportant.

4.1.5 Beer price

According to the producers who were interviewed, the price is a determining and important factor at the time of purchase by the consumer. Typically, SBs cost more as compared to commercial beers, making its price an obstacle to their expansion in the market (Carvalho *et al.*, 2018). This is mainly due to the quality of the raw material used as well as the taxes throughout the product chain, since the importation of raw materials until its commercialization increases the cost of the product.

Nardi (2018) analyzed the consumer behavior of craft beer in the state of Rio Grande do Sul and found that price can influence consumers in choosing a particular beer, with a cost-benefit assessment. Regular consumers consider SBs to be of higher quality than commercial beers.

4.1.6 Beer consumer characteristics

The profile that the consumer of SBs presents in the perception of professionals in the field of special beers was addressed in the interview script. It was pointed out that the public consuming this type of drink has been diversifying due to the fact that it is increasing but still belonging to middle to upper class, with the majority of men, between 25 and 49 years of age,

with income above three minimum wages and with higher education and greater clarification of information. In addition, it's an audience looking for news and new consumer experiences.

When asked about a possible approach between commercial and SB consumers regarding beer knowledge, most respondents believed that this fact was being observed but with the price variable causing interference.

Customers have seen that there are other beer options in the market that can bring a better experience, and if they can afford it (price), try it. Respondent 14

4.1.7 Special beer versus commercial beer

About both beers type, in the producers view, factors such as industry size and production objective were raised according to the findings as follows:

Commercial beers are produced in large industries and have a price-oriented positioning; specialty beers are friendlier to their audience and create consumer status. Respondent 3

Such perceptions are in agreement with the result as documented by several authors that commercial beers are produced by traditional and large-scale breweries, while SB have different flavors, in addition to greater care in all their preparation, generating a differentiated product when compared to commercial beer in relation to ingredients, production and consumption. The global beer market faces a significant increase in artisan and SB because beer lovers search for products other than those produced on the mass scale (Aquilani *et al.*, 2015; Donadini *et al.*, 2016; Ducruet *et al.*, 2017; Kawa-Rygielska *et al.*, 2019). Different authors report that industrial mass-produced food represents a decline in quality of food, especially in terms of flavor (Gómez-Corona *et al.*, 2016a; Donadini and Porretta, 2017; Rytönen *et al.*, 2018; Schösler and de Boer, 2018).

The biggest difficulty for large beer producers who want to be involved in the production of SBs is that the evidence reviewed suggests that consumer perception of product craftsmanship seems to be strongly affected by the belief that on a small-scale production, the artisan is putting great care in his craft, thus producing unique products of higher value than those produced on a large scale. Besides, in recent years, many small-scale and independent breweries have been purchased by large brewing organizations vying to get a share of the growing and profitable niche market in craft beer, and this raises the question of whether the beer produced by such breweries can still be defined as “craft” or “special” (Morgan, Lane, and Styles, 2020; Rivaroli, Baldi and Spadoni, 2020).

4.1.8 Suggestions for future studies

About future studies, topics were suggested regarding trends in styles to be consumed, differentiation of beer flavors, the price range to pay and packaging and labeling factors that might interfere with product purchase.

4.2 Quantitative study - specialty beers consumers

4.2.1 Profile and characterization of the sample

There were 301 respondents, 67.1% male, and the majority aged between 26 and 35 years (42.5%). Similar to the study carried out by Gómez-Corona *et al.* (2016a), there was an age effect with Mexican consumers, being those aged between 25 and 35 years and men, more likely to consume craft beer. As for the income, 22.9% of the respondents had a monthly family income between R\$ 6,270.01 and R\$ 10,450. Concerning level of education, 51.5% are studying or have completed postgraduate studies.

Regarding the frequency of consumption of SBs, most participants (63.8%) consumed special beers at least twice a month. In addition to ingredients and production methods, SB

also differs from commercial beer in terms of consumption characteristics. Consumers of SB tend to consume less beer, but they seek more specialty and more expensive beers because they are more willing to try new flavors of the beverage (Murray and O'Neill, 2012; Aquilani *et al.*, 2015; Donadini *et al.*, 2016).

Regarding the type of beer consumed, only 12.6% of the participants stated they consumed just special beer, while the majority (87.4%) stated they consumed both special and commercial beers. According to Donadini *et al.* (2016), large breweries are realizing this and are trying to reposition themselves with greater focus and investment in the SB sector, without abandoning the commercial beer market segment.

Among the determining factors interfering purchase of a SB, the most pointed out factors were the style of the beer (83.7%) and the price (49.8%). The beer styles most preferred by the participants were IPA (59.8%) and Pilsen (36.5%). In addition, more than half of the respondents (53.4%) agreed that there is a relationship between the selection of beer style at the time of purchase and the occasion for consumption or harmonization.

Consumer research also shows craft beer drinkers seek wide variety of beer styles and flavors. These often include highly innovative beers, some of them having high levels of hops, strong flavor profiles and/or high alcohol content (Jaeger *et al.*, 2021). As described by Silva *et al.* (2017), the occasion of consumption of alcoholic beverages may include factors such as the physical location of the consumer, the occasion of use and even the time of day, showing the relationship between style consumed and occasion/harmonization.

Once two options of special beer labels with their information were presented, in text, 89.4% of consumers preferred the label containing, in addition to mandatory information like alcohol content, beer type and volume and other characteristics such as bitterness (IBU), coloring (EBC) and types of malt and hops used in the manufacture of beer. Among the information on the label that most influence consumers in the purchase and consumption,

62.1% of the respondents mentioned the bitterness (IBU), 55.8% the alcohol content and 33.6% the presence of award seals. Merlino *et al.* (2020), in a study with beer consumers in Italy, also found that two consumer samples were defined on the basis of individual statements regarding their preferred method of beer packaging: The “traditional” consumer is loyal to the conventional beer packaging material (glass bottle) and the “innovative” consumer is more inclined to packaging innovation (the use of aluminum cans).

4.2.2 Specificities in the consumption of SB

Based on the predictive variables of the questionnaire, by frequency analysis, important differences between consumers of only SB and the consumers of special and commercial beer were noted.

Participants consuming only SB were mostly male (86.8%), aged between 36 and 45 years (42.1%), with high household income and level of education. Specifically in relation to the income level, the majority (55.2%) of consumers of only SB had income above R\$ 10,450/month. On the other hand, among consumers of specialty and commercial beer, 71.1% of respondents had income below R\$ 10,450/month.

Regarding the frequency of consumption, the majority (44.7%) of consumers of only SB consumes 2-3 times a week. Regarding consumers of both types of beer, only 17.1% of respondents consume SB in the same period of time.

In the last decade, consumers worldwide have had a growing interest in microbreweries and specialized beers (Donadini and Porretta, 2017; Gómez-Corona *et al.*, 2017). Assessing the time that respondents already consumed SB, the majority (42.1%) of consumers of only SB consumed between 5 and 10 years, while, among consumers of special and commercial beer, 53.6% consumed SBs between 1 and 5 years.

Regarding the preferred special beer style, the majority (57.9%) of consumers of only SB preferred the consumption of IPA, while the Pilsen style stood out among consumers of special and commercial beers, being preferred by 41.1% of respondents. The IPA style is characterized as an ale beer that is *hoppier* and bitter, complex, moderately strong and with a color between medium golden and reddish amber, while Pilsen is a lager beer that is neutral, moderately hopped and with notes of malt and golden color (BJCP, 2015).

Although the raw materials are practically uniform in all beer styles, some flavors and aromas are unique according to the beer production tradition, and the loyal and more frequent audience of SB tends to look for new flavors and experiences in the consumption of the drink, opting for more complex and differentiated styles. While consumers of commercial beers usually focus on industrial manufacturing, consumers of SB leave their attention on the taste, production process and ingredients of the drink (Donadini and Porretta, 2017; Willians and Barretta, 2018; Humia *et al.*, 2019).

Regarding packaging, consumers of only SB were, in general, not influenced by their characteristics at the time of purchase. Most of these consumers said they were not influenced by material, size, bottle shape and color of the special beer packaging. In addition, most have no preference regarding the packaging material over glass, aluminum and plastic and also the volume (size) of the beer.

Finally, regarding price, the majority (34.2%) of consumers of only SB stated that they are used to paying between R\$ 18.01 and R\$ 22.00 in a 600 mL unit of special beer, while the group of consumers of both types of beer a value below between R\$ 10.01 and R\$ 14.00. Regarding the maximum price that would be paid for this same product, the majority (55.3%) of consumers of only SB would spend over R\$ 22.00; at the same time, only 22.8% of consumers of both products would pay this amount.

4.2.3 Cluster analysis

Based on the predictor variables of the questionnaire, Cluster analysis was performed, using, as a criterion for segmentation, the cross-tabulation between the groups and the predictor variables themselves, by the chi-square test.

Of the 301 participants, 41.5% ($n = 125$) was allocated to Cluster 1, while 37.2% ($n = 112$) to Cluster 2 and 21.3% ($n = 64$) to Cluster 3.

4.2.3.1 Sociodemographic profile

Table 1 presents the results of the sociodemographic characterization obtained by the cluster analysis. The variables of gender, monthly income and education did not show significant difference ($p \leq 0.05$) between the groups, being that all the clusters composed, mainly, by male individuals, with minimum monthly income of R\$ 3,135.01 and high level of education. Regarding the age group, when compared to the other clusters, Cluster 1 was characterized by the greater presence of respondents up to 35 years old, while Clusters 2 and 3 included consumers aged 36 years or over.

TABLE 1 Clusters sociodemographic characterization

Variables	Cluster 1 (%) (n=125)	Cluster 2 (%) (n=112)	Cluster 3 (%) (n=64)	p-value*
Gender				0.093
Female	38.4	25.2	34.4	
Male	61.6	74.8	65.6	
Age (years)				$p \leq 0.05$
18-25	22.4	15.2	17.2	
26-35	51.2	34.8	39.1	
36-45	16.0	33.0	26.6	
46-55	4.8	9.8	14.1	
56-65	4.8	5.4	1.6	
Over 66	0.8	1.8	1.6	
Monthly family income				0.062
Up R\$ 1,045.00	4.0	0.9	1.6	
R\$ 1,045.01 - R\$ 2,090.00	4.8	6.3	10.9	
R\$ 2,090.01 - R\$ 3,135.00	18.4	13.4	3.1	
R\$ 3,135.01 - R\$ 6,270.00	21.6	22.3	25.0	
R\$ 6,270.01 - R\$ 10,450.00	27.2	18.8	21.9	
R\$ 10,450.01 - R\$ 15,675.00	14.4	18.8	17.2	
Over R\$ 15,675.00	9.6	19.6	20.3	
Education level				0.600
Complete high school	3.2	2.7	7.8	
Incomplete higher education	20.8	16.1	15.6	
Complete higher education	24.8	29.5	25.0	
Post graduate	51.2	51.8	51.6	

* Confidence level $\geq 95\%$: result with p -value ≤ 0.05 .

4.2.3.2 Consumer behavior and associations between specialty and commercial beers

Table 2 presents the results obtained for variables describing the respondents' consumption behavior. The clusters showed a significant difference ($p \leq 0.05$) in relation to the variables of frequency and time of consumption of SB, type of beer consumed and preferred style. In addition, Table 3 presents the results about associations and definitions made by the clusters regarding special and commercial beers, showing a significant difference ($p \leq 0.05$) in aspects related to price, quality and quantity of consumption and production.

TABLE 2 Clusters consumption behavior

Variables	Cluster 1 (%) (n=125)	Cluster 2 (%) (n=112)	Cluster 3 (%) (n=64)	p-value*
Consumption frequency				<i>p</i> ≤0.05
Less once a month	15.2	5.4	6.3	
Once a month	20.8	11.6	17.2	
2-3 times a month	29.6	20.5	31.3	
Once a week	17.6	17.9	12.5	
2-3 times a week	9.6	27.7	29.7	
Over 3 times a week	4.8	8.0	3.1	
Daily	2.4	8.9	-	
Consumption time				<i>p</i> ≤0.05
Less than 1 year ago	8.0	8.9	3.1	
1-5 years	59.2	36.6	57.8	
5-10 years	25.6	38.4	29.7	
Over 10 years ago	7.2	16.1	9.4	
Beer consumed type				<i>p</i> ≤0.05
Specialty beer only	4.8	17.0	20.3	
Specialty and commercial beer	95.2	83.0	79.7	
Determining buying factor				0.556
Beer style	84.7	81.3	87.5	
Beer price	12.1	9.8	7.8	
Others	3.2	8.9	4.7	
Preferred beer style				<i>p</i> ≤0.05
Pilsen	49.2	30.8	27.0	
American Lager	18.0	16.8	19.0	
India Pale Ale	19.7	35.5	44.4	
Weiss	5.7	2.8	4.8	
I do not know/without preference	7.4	14.0	4.8	
When purchasing a special beer, I select the beer style based on the occasion of consumption or harmonization				0.159
Disagree	25.6	17.0	14.1	
Indifferent	30.4	24.1	23.4	
Agree	44.0	58.9	62.5	
Packaging characteristics that interfere at the purchase time				0.167
Material	55.7	45.9	42.2	
Volume	24.6	23.4	15.6	
Others	4.1	8.1	9.4	
None	15.6	22.5	32.8	
Material preference				0.057
Glass	63.2	57.1	59.4	
Aluminum	8.8	6.3	-	
Aluminum and glass	16.8	17.9	14.1	
None	11.2	18.7	26.5	
Volume preference				0.358
269 mL	4.0	3.6	3.1	
350 mL	14.4	7.1	4.7	
473 mL	8.0	16.1	18.8	
600 mL	52.0	49.1	50.0	
1,000 mL	4.0	2.7	3.1	
None	17.6	21.4	20.3	
When purchasing a special beer, I select the beer packaging type				0.105

<i>(material or volume) based on the occasion of consumption</i>			
Disagree	28.8	34.0	28.2
Indifferent	22.4	24.1	20.3
Agree	48.8	41.9	51.5
<i>Preference label</i>			0.100
Label with mandatory information	3.2	3.6	7.8
Label with varied characteristics	88.0	89.3	92.2
Indifferent	8.8	7.1	-
<i>Label information that most influences purchase/consumption</i>			0.450
Bitterness (IBU)	63.2	57.1	68.8
Color (EBC)	5.6	3.6	6.3
Alcohol content	16.0	15.2	12.5
Malt type	3.2	7.1	1.6
Term "Pure Malt"	3.2	5.4	1.6
Hop type	0.8	3.6	3.1
Product/company sustainability	0.8	0.9	-
Award stamp	4.0	-	1.6
None	3.2	7.1	4.5
<i>Price usually paid</i>			0.059
≤ R\$ 6.00	-	0.9	-
R\$ 6.01 - R\$ 10.00	18.4	14.3	20.3
R\$ 10.01 - R\$ 14.00	36.0	32.1	25.0
R\$ 14.01 - R\$ 18.00	30.4	24.1	29.7
R\$ 18.01 - R\$ 22.00	14.4	16.1	17.2
> R\$ 22.00	0.8	12.5	7.8
<i>Maximum price to pay</i>			0.061
Up to R\$ 6.00	-	-	1.6
Up to R\$ 10.00	6.4	6.3	6.3
Up to R\$ 14.00	21.6	9.8	18.8
Up to R\$ 18.00	24.0	21.4	21.9
Up to R\$ 22.00	29.6	25.0	26.6
Over R\$ 22.00	18.4	37.5	25.0

* Confidence level $\geq 95\%$: result with p-value ≤ 0.05 .

TABLE 3 Associations between special and commercial beers made by the clusters

Variables	Cluster 1 (%) (n=125)	Cluster 2 (%) (n=112)	Cluster 3 (%) (n=64)	p-value*
<i>Specialty beer has a high price, while commercial beer has a low price</i>				<i>p≤0.05</i>
Disagree	0.8	43.6	3.1	
Indifferent	12.8	37.5	21.9	
Agree	86.4	18.9	75.0	
<i>Specialty beer has a high quality, while commercial beer has a low quality</i>				<i>p≤0.05</i>
Disagree	28.8	41.9	-	
Indifferent	48.8	25.0	3.1	
Agree	22.4	33.1	96.9	
<i>Specialty beer is consumed in low quantities, while commercial beer is consumed in high quantities</i>				<i>p≤0.05</i>
Disagree	0.8	30.4	-	
Indifferent	12.8	28.6	9.4	
Agree	86.4	41.0	90.6	
<i>Specialty beer is produced in low quantities, while commercial beer is produced in high quantities</i>				<i>p≤0.05</i>
Disagree	20.0	17.9	-	
Indifferent	22.4	27.7	1.6	
Agree	57.6	54.4	98.4	

* Confidence level ≥ 95%: result with p-value ≤ 0.05.

Cluster 1 (41.5%) was formed predominantly by consumers of SB who consume the product less frequently, 1 and 3 times a month and who, when compared with the other groups, consumes the product for less time (67.2% consumes for a maximum of 5 years). This group concentrates the smallest portion of consumers only of SB, showing that these individuals also consume commercial beer, in addition to presenting the Pilsen style as being the preferred one for purchase and consumption. In addition, the majority of consumers (86.4%) demonstrated agreement that the SB has a high price and the commercial beer has a low price, while only 22.4% agree that the SB has high quality and the commercial beer has low quality. With that, it is possible to define Cluster 1 as being the group of “beginners in the universe of specialty beers, still consumers of commercial beers”.

The beer category has been dominated by a single style, lager, for a long time (Gómez-Corona *et al.*, 2016b). In Brazil, commercial beers are almost always defined as lager beers, American Lager or Pilsen style, characterized as lighter, refreshing and less-complex beers. This fact comes in line with the preferred style and characterization of Cluster 1.

Cluster 2 (37.2%) was defined by the presence of consumers who mostly consume SBs more frequently (2 to 3 times a week) and there is a longer period of time, with 54.5% started consumption at least 5 years ago. This group has a preference for the IPA style, and approximately 1/3 of consumers are willing to pay over R\$ 22.00 in a unit of 600 mL of SB. A small number of consumers in this group (18.9%) agree that SB has a high marketing price and commercial beer has a low price, in addition to having the lowest rate of agreement that SB is consumed in low quantities and commercial beer has high quantity. Thus, Cluster 2 is made up of “regular consumers and willing to pay more for special beer”.

These regular consumers are not influenced by price and constitute the principal market for small and microbreweries (Koch and Sauerbronn, 2018). The product quality, including ingredients and brewing processes, is the most appealing marketing component for these consumers.

Finally, the group with the lowest number of consumers (21.3%) is Cluster 3, which is characterized as “legitimate consumers of special beer and averse to commercial beer”. They are consumers who, when compared to other groups, present a larger portion that consumes only the SB, greater preference for the IPA style and who believe that the IBU is the attribute of greatest influence in the purchase and consumption of a SB. In addition, 96.9% believe that SB is of high quality and commercial beer is of low quality, with the majority also agreeing with the characterization of commercial beer as being of high production and consumption.

Craft and special beer drinkers have shown to place a high degree of importance on the quality of the beer and on its authenticity (Aquilani *et al.*, 2015; Jaeger *et al.*, 2020).

Research by Gómez-Corona *et al.* (2016a) with special beer consumers illustrated characteristics of the SB such as “that is carefully produced” or produced by “a more complicated process”, “produced on a small scale” or one “that has a limited production”.

Koch and Sauerbronn (2018), analyzing the Brazilian craft beer subculture of consumption with consumers at beer festivals, craft beer meetings and collective mashing, noted the existence of the "drink less, drink better" idea, showing commitment to enjoyment and responsibility as part of craft beer consumers reject mass-produced beer and antisocial behaviors usually associated with beer drinkers. However, there is a recent emergence of a group of beginning special beers consumers even if they are still consumers of commercial beers as observed in the present study, being an important market niche opportunity for medium and large breweries, and also observed by Jaeger *et al.* (2020). In this research with declared craft beer drinkers, two distinct flavor preference segments were identified. One segment, designated as a strong flavor liking segment, enjoyed the characteristically novel and high flavor impact profiles of craft-style beers, whereas another segment preferred the lower flavor impact of more traditional-style beers.

4.3. Comparative of perceptions

In view of the study, producers and consumers defined the most influential buying factors of SB as the style and price of the beer. In addition, both classes believe that the packaging and label of the product also interfere at the buying moment.

The beer styles preferred by consumers were IPA and Pilsen, while producers of SBs believe that, in addition to these, the American Lager style has a high preference for consumers. The possible relationship between the style consumed and the reason or occasion of consumption, in addition to the harmonization with certain foods, was exposed by producers and confirmed by consumers of SBs.

Regarding the packaging, producers and consumers of SB indicated that the material and size (volume) of the beer packaging are the buying factors that most interfere. Specifically regarding the label, producers believe that the creation of classic and traditional labels, in addition to modern and interactive labels, is important according to the type and style of beer produced. However, approximately 90% of consumers participating in the study indicated that they prefer a more modern label with greater interaction with the consumer, while only 4.3% of consumers prefer a classic and traditional label containing only mandatory information defined by legislation.

Although the public that consumes only SBs presents some divergences in relation to the producers perceptions, in addition to the differences in behavior when compared to consumers of both types of beers (specialty and commercial), as previously discussed, consumers of only SB have a higher monthly family income, above R\$ 10,450, and, in general, contrary to the producers perceptions, they are not influenced by packaging characteristics as material, size, bottle shape and color of the special beer packaging at the time of purchase.

5 CONCLUSION

The study demonstrated an important convergence in the perceptions of professionals in the beer industry in relation to consumers and the real behavior of SBs consumers.

In view of the study, it was observed that professionals in the SB industry believed that the main influencing factors at the time of purchase by consumers are beer style, price and product label. The consumer research confirmed that the style and price of the SB are the factors that most influence purchase. Still on the styles, IPA and Pilsen, pointed out by professionals as preferred by consumers, was confirmed in the research.

Still in the view of professionals, sensory information, such as alcohol content and bitterness, as well as quality attributes, such as the term “pure malt” and award seals were noted as relevant for exposure on the beer’s front label in order to influence product perception and purchase intention. For private information on beer revenues, the source of water used and company’s day-to-day practices, such as sustainability, was found to be unimportant. For consumers, the same bitterness and alcohol content are important attributes of the label in SB.

According the professionals respondents, the profile of special beers consumers has been changing and diversifying, mainly due to the fact that numerous new consumers are emerging. Through the study with consumers, three groups of consumers of special beers were identified: (1) beginners in the universe of SB, still consumers of commercial beers; (2) regular consumers and willing to pay more for SB and (3) legitimate consumers of SB and adverse to commercial beer. Special beer consumers experience different sentiments and characteristics, and the identification of consumer groups with different consumption profiles and perceptions is able to subsidize industries in the development and offer of products according to the specific characteristics of the consuming public with their distinct typologies.

Finally, in the study with consumers, it was possible to observe important differences in monthly family income, frequency of consumption, time of consumption of SBs, preferred beer style and maximum price to pay for a SB between the consumer group of SB only and the consumer group of special and commercial beer.

The converging results of opinions between producers and consumers of special beers may suggest that beer companies are directing the development of their products according to the desire and perception of consumers. However, the different categories of consumers of special beers have different characteristics and behavior, which makes it of fundamental importance to define different strategies, such as, the extension of the product line and,

consequently, the service to different niches of market by companies. Other studies showed the segmentation of the beer market, but the current research presented the segmentation only of consumers of special beers, showing that, specifically in this public, there may already be a defined segmentation. Previous research studies of beer consumers showed a segmentation based on the type of beer consumed (craft and commercial) about the motivations to consume a product for experiential vs. functional reasons (Gómez-Corona et al., 2016a); place of consumption (home and hostelry consumption) (Calvo-Porrá and Levy-Mangin, 2019); socioeconomic profile, as gender and age and consumption frequency of the participants, namely “beer lovers”, “circumspect seniors”, “social drinkers”, “homelike women” and “beer to fuddle consumers” (Calvo-Porrá et al., 2018) and characterization of beers by attitude, situation and emotion measures, active or passive, using consumer-based variables such as product loyalty, product image, perceived quality and purchase intention (Cardello *et al.*, 2016). On the other hand, the present study observed that SBs consumers presented segmentation, at the same time, based on the time they became a consumer of SB, type of beer consumed (special and commercial), opinion about beer type and willingness to pay for a special beer, unlike previous studies mentioned.

Data and information of this study involving brewing professionals and consumers and the observation of different SB consumer groups generate scientific information and knowledge which assist the specialty brewing industry in developing new products according to the specific consuming public, in addition to generating important information related to labeling/packaging aspects.

Future studies with consumers may investigate regarding the taste and style preferences as well as specific labeling and packaging factors that may influence the time of purchase, creating alternatives in the development of products that meet consumers' needs and generate practical applications for brewers in the definition of marketing strategies, with

consequent strengthening of the beer sector. In addition, future research with a greater number of interviewees and in other locations could contribute to obtaining more results and improving subject understanding.

REFERENCES

- Aaker, D.A., Kumar, V. and Day, G.S. (2001), *Pesquisa de marketing*, 3 ed., São Paulo: Atlas.
- Albanese, L., Ciriminna, R., Meneguzzo, F. and Pagliaro, M. (2018), “Innovative beer brewing of typical, old and healthy wheat varieties to boost their spreading”, *Journal of Cleaner, Production*, Vol. 171, pp. 297–311.
- Antonialli, F., Rezende, D. and Carneiro, J. de D. (2018), “New products development: a marketing study of a popsicle produced with whey”, *Organizações Rurais & Agroindustriais*, Vol. 20, No. 1, pp. 1-14.
- Aquilani, B., Laureti, T., Poponi, S. and Secondi, L. (2015), “Beer choice and consumption determinants when craft beers are tasted: An exploratory study of consumer preferences”, *Food Quality and Preference*, Vol. 41, pp. 214–224.
- Arun, T. M., Kaur, P., Ferraris, A., & Dhir, A. (2021), “What motivates the adoption of green restaurant products and services? A systematic review and future research agenda”, *Business Strategy and the Environment*, Vol. 30, No. 4, pp. 2224-2240.
- Bardin, L. (2010), *Content analysis*, Lisboa: Publisher 70.
- BJCP (2015), “Beer Judge Certification Program, 2015 Style guidelines”, available at: https://www.bjcp.org/docs/2015_Guidelines_Beer.pdf (accessed 30 April 2021).
- Brazil (2021), Ministry of Agriculture, “Livestock and supply. Beer yearbook in Brazil 2020”, available at: <https://www.gov.br/agricultura/pt-br/assuntos/noticias/com-crescimento->

de-14-4-em-2020-numero-de-cervejarias-registradas-no-brasil-passa-de-1-3-mil/anuariocerveja2.pdf (accessed 30 April 2021).

- Calvo-Porrall, C., Levy-Mangin, J-P. (2019), “Situational factors in alcoholic beverage consumption”, *British Food Journal*, Vol. 121, No. 9, pp. 2086-2101.
- Calvo-Porrall, C., Orosa-González, J. and Blazquez-Lozano, F. (2018), "A clustered-based segmentation of beer consumers: from "beer lovers" to "beer to fuddle", *British Food Journal*, Vol. 120, No. 8, pp. 1280-1294.
- Carbone, A., Quici, L. (2020), “Craft beer mon amour: an exploration of Italian craft consumers”, *British Food Journal*, Vol. 122, No. 8, pp. 2671–2687.
- Cardello, A.V., Pineau, B., Paisley, A.G., Roigard, C.M., Chheang, S.L., Guo, L.F., Hedderley, D.I. and Jaeger, S.R. (2016), “Cognitive and emotional differentiators for beer: an exploratory study focusing on uniqueness”, *Food Quality & Preference*, Vol. 54, No. 1, pp. 23-38.
- Carneiro, J. D. S., Silva, C. H. O., Della Lucia, S. M. and Minim, V. P. R. (2018), “Análise conjunta de fatores”. In V. P. R. Minim (Ed.), *Análise sensorial: estudos com consumidores*, pp. 191–242, Viçosa: Editora UFV.
- Carvalho, N.B., Minim, L.A., Nascimento, M., Ferreira, G.H. de C. and Minim, V.P.R. (2018), “Characterization of the consumer market and motivations for the consumption of craft beer”, *British Food Journal*, Vol. 120, No. 2, pp. 378–391.
- De Paula, S.C.S.E., Zuim, L., De Paula, M.C., Mota, M.F., Filho, T.L. and Della Lucia, S.M. (2021), “The influence of musical song and package labeling on the acceptance and purchase intention of craft and industrial beers: A case study”, *Food Quality and Preference*, Vol. 89, p.104139.

- Donadini, G., Fumi, M.D., Kordialik-Bogacka, E., Maggi, L., Lambri, M. and Sckokai, P. (2016), “Consumer interest in specialty beers in three European markets”, *Food Research International*, Vol. 85, pp. 301-314.
- Donadini, G. and Porretta, S. (2017), “Uncovering patterns of consumers' interest for beer: a case study with craft beers”, *Food Research International*, Vol. 91, pp. 183–198.
- Ducruet, J., Rébenaque, P., Diserens, S., Kosinska-Cagnazzo, A., Héritier, I. and Andlauer, W. (2017), “Amber ale beer enriched with goji berries – The effect on bioactive compound content and sensorial properties”, *Food Chemistry*, Vol. 226, pp. 109-118.
- Eldesouky, A., Pulido, A.F. and Mesias, F.J. (2015), “The role of packaging and presentation format in consumers preferences for food: an application of projective techniques”, *Journal of Sensory Studies*, Vol. 30, No. 5, pp. 360–369.
- Elliot, E.A. (2016), “Craft consumption and consumer transformation in a transmodern era”, *Journal of Business Research*, Vol. 69, No. 1, pp. 18-24.
- Emerson, R.W. (2015), “Convenience sampling, random sampling, and snowball sampling: How does sampling affect the validity of research?”, *Journal of Visual Impairment & Blindness*, Vol. 109, No. 2, pp. 164-168.
- Food Technology Institute – ITAL. (2010), “*Brasil Food Trends 2020*”. ITAL/FIESP, p. 173. São Paulo.
- Gallone, B., Steensels, J., Prahl, T., Soriaga, L., Saels, V., Herrera-Malaver, B., Merleyede, A., Roncoroni, M., Voordeckers, K., Miragila, L., Telling, C., Steffy, B., Taylor, M., Schwartz, Richardson, I., White, C., Baele, G., Maere, S. and Verstrepen, K.J. (2016), “Domestication and divergence of *Saccharomyces cerevisiae* beer yeasts”, *Cell*, Vol. 166, No. 6, pp. 1397–1410.

- Gómez-Corona, C., Chollet, S., Escalona-Buendía, H.B. and Valentin, D. (2017), “Measuring the drinking experience of beer in real context situations. The impact of affects, senses, and cognition”, *Food Quality and Preference*, Vol. 60, pp. 113–122.
- Gómez-Corona, C., Escalona-Buendía, H.B., García, M., Chollet, S. and Valentin, D. (2016a), “Craft vs. industrial: Habits, attitudes and motivations towards beer consumption in Mexico”, *Appetite*, Vol. 96, pp. 358-367.
- Gómez-Corona, C., Lelievre-Desmas, M., Escalona Buendía, H.B., Chollet, S. and Valentin, D. (2016b), “Craft beer representation amongst men in two different cultures”, *Food Quality and Preference*, Vol. 53, pp. 19–28.
- Guerra, I.C. (2006), *Qualitative research and content analysis: meanings and forms of use*, São João do Estoril: Princípiã.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (2005), *Análise multivariada de dados*, 5 ed., Porto Alegre: Bookman.
- Humia, B.V., Santos, K.S., Barbosa, A.M., Sawata, M., Mendonça, M.C. and Padilha, F.F. (2019), “Beer molecules and its sensory and biological properties: A review”, *Molecules*, Vol. 24, No. 8, p. 1568.
- Jaeger, S.R., Xia, Y., Le Blond, M., Beresford, M. K., Hedderley, D. I. and Cardello, A.V. (2019), “Supplementing hedonic and sensory consumer research on beer with cognitive and emotional measures, and additional insights via consumer segmentation”, *Food Quality and Preference*, Vol. 73, p. 117-134.
- Jaeger, S.R., Worch, T., Phelps, T., Jin, D. and Cardello, A.V. (2020), “Preference segments among declared craft beer drinkers: Perceptual, attitudinal and behavioral responses underlying craft-style vs. Traditional-style flavor preferences”, *Food Quality and Preference*, Vol. 82, p. 103884.

- Jaeger, S.R., Worch, T., Phelps, T., Jina, D. and Cardelloc, A.V. (2021), “Effects of “craft” vs. “traditional” labels to beer consumers with different flavor preferences: A comprehensive multi-response approach”, *Food Quality and Preference*, Vol. 87, p. 104043.
- Jardim, C.C., Souza, D., Machado, I.C.K., Pinto, L.M.N., Ramos, R.C.S. and Garavaglia, J. (2018), “Sensory Profile, Consumer Preference and Chemical Composition of Craft Beers from Brazil”, *Beverages*, Vol. 106, No. 4.
- Kawa-Rygielska, J., Adamenkoa, K., Kucharskab, A.Z., Proroka, P. and Pióreckic, N. (2019), “Physicochemical and antioxidative properties of Cornelian cherry beer”, *Food Chemistry*, Vol. 281, pp. 147–153.
- Kirin Beer University (2018), *Kirin Beer University Report Global Beer Production by Country in 2017*, available at: https://www.kirinholdings.co.jp/english/news/2018/0809_01.html (accessed 30 April 2021).
- Koch, E.S. and Sauerbronn, J.F.R. (2018), “To love beer above all things: An analysis of Brazilian craft beer subculture of consumption”, *Journal of Food Products Marketing*, Vol. 25, No. 1, pp. 1-25.
- Kotler, P. and Keller, K.L. (2012), *Marketing Administration*, 14 ed., São Paulo: Pearson.
- Krishna, A., Cian, L. and Aydinoglu, N.Z. (2017), “Sensory aspects of package design”, *Journal of Retailing*, Vol. 93, No. 1, pp. 43–54.
- Makrides, A., Kvasova, O., Thrassou, A., Hadjielias, E. and Ferraris, A. (2021), “Consumer cosmopolitanism in international marketing research: a systematic review and future research agenda”, *International Marketing Review*.

- Merlino, V.M., Blanc, S., Massaglia, S. and Borra, D. (2020), “Innovation in craft beer packaging: Evaluation of consumer perception and acceptance”, *AIMS Agriculture and Food*, Vol. 5, No. 3, pp. 422–433.
- Meyerding, S.G.H., Bauchrowitz, A. and Lehberger, M. (2019), “Consumer preferences for beer attributes in Germany: A conjoint and latent class approach”, *Journal of Retailing and Consumer Services*, Vol. 47, pp. 229–240.
- Morado, R. (2011), *Beer Larousse*, 1 ed., São Paulo: Brazil Larousse.
- Morgan, D.F., Lane, E.T. and Styles, D. (2020), “Crafty marketing: an evaluation of distinctive criteria for “Craft” beer”, *Food Reviews International*, Vol. 1, pp. 8755-9129.
- Murray, D.W. and O’Neill, M.A. (2012), “Craft beer: penetrating a niche market”, *British Food Journal*, Vol. 114, No. 7, pp. 899–909.
- Nardi, R.G. (2018), *Consumer behavior: Analysis of craft beer consumers in the cities of Lajeado, Estrela and Teutônia/RS*, University of Taquari Valley, Lajeado.
- Parker, D., Taylor, M., Johnson, J.R. and Thomas, K.R. (2020), “British beer styles. Where are they heading?”, *British Food Journal*, Vol. 122, No. 1, pp. 60–74.
- Rivaroli, S., Baldi, B. and Spadoni, R. (2020), “Consumers’ perception of food product craftsmanship: A review of evidence”, *Food Quality and Preference*, Vol. 79, pp. 103796.
- Roncarelli, S. and Ellicott, C. (2010), *Packaging Design: 100 Design and Application Fundamentals*, São Paulo: Blucher.
- Rosales, A., Talaverano, M.I., Lozano, J., Sánchez-Vicente, C., Santamaría, Ó., García-Latorre, C. and Rodrigo, S. (2021), "Craft beer vs industrial beer: chemical and sensory differences", *British Food Journal*, Vol. 123, No. 12, pp. 4332-4346.

- Rytkönen, P., Bonow, M., Girard, C., and Tunón, H. (2018), “Bringing the consumer back in the motives, perceptions, and values behind consumers and rural tourists’ decision to buy local and localized artisan food. A Swedish example”, *Agriculture*, Vol. 8, No. 4, pp. 58.
- Santeramo, F.G., Carlucci, D., De Devitiis, B., Seccia, A., Stasi, A., Viscecchia, R. and Nardone, G. (2018), “Emerging trends in European food, diets and food industry”, *Food Research International*, Vol. 104, pp. 39–47.
- Santos, M.A.S., Ribeiro, P.V.L., Andrade, C.P., Machado, A.R.G., Souza, P.G. and Kirsch, L.S. (2021), “Physicochemical and sensory analysis of craft beer made with soursop (*Annona muricata* L.)”, *Acta Scientiarum Polonorum, Technologia Alimentaria*, Vol. 20, No. 1, pp. 103–112.
- Schösler, H. and de Boer, J. (2018), “Towards more sustainable diets: Insights from the food philosophies of “gourmets” and their relevance for policy strategies”, *Appetite*, Vol. 127, pp. 59–68.
- Silva, A.P., Jager, G., Voss, H.P., Van Zyl, H., Hogg, T., Pintado, M. and De Graaf, C. (2017), “What’s in a name? The effect of congruent and incongruent product names on liking and emotions when consuming beer or non-alcoholic beer in a bar”, *Food Quality & Preference*, Vol. 55, No. 1, pp. 58-66.
- Steenkamp, J.B.E., Ter Hofstede, F. and Wedel, M. (1999), “A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness”, *Journal of Marketing*, Vol. 63 No. 2, pp. 55-69.
- Subramanian, K.R. (2017), “Impact of packaging in self service marketing”, *International Journal of Scientific Progress and Research*, Vol. 33, No. 93, pp. 60-66.

- Zanetta, L.D., Umebara, M.T.C., Costa, J.P., Takeda, D.K. and Da Cunha, D.T. (2021), “Hedonic, emotional and willingness-to-pay response to beers of a different type in Brazil”, *British Food Journal*, Vol. 123, No. 1, pp. 87–107
- Ward Jr, J.H. (1963), “Hierarchical grouping to optimize an objective function”, *Journal of the American statistical association*, Vol. 58, No. 301, pp. 236-244.
- Willians, C.A. and Barretta, P.G. (2018), “Beer purchase decisions and consumption behavior”, *BRC Journal of Advances in Business*, Vol. 3, No. 1, pp. 51-72.

**ARTIGO 2 - INFLUENCE OF CONSUMPTION EXPERIENCE ON THE BEHAVIOR
OF CRAFT BEER CONSUMERS: BEGINNER CONSUMERS VS. EXPERIENCED
CONSUMERS**

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Influence of consumption experience on the behavior of craft beer consumers: beginner consumers vs. experienced consumers

Perception, knowledge, and purchase intention of craft beer consumers with different experience levels and consumption time

Abstract

Purpose - Identify the profiles of beginner and experienced consumers of craft beer and evaluate their perception, knowledge, and purchase intention.

Methodology - A total of 291 craft beer consumers including 148 beginner consumers (BCs) and 143 experienced consumers (ECs) participated in the study, which was divided into two stages: market research through a questionnaire and conjoint analysis.

Findings - BCs are mostly female, with a lower age, income, education, and consumption frequency, presented a shallower understanding of International Bitterness Units (IBU), and considered 7.0% alcohol by volume (ABV) as a high relatively value in craft beers. On the other hand, ECs are mostly men with a higher age, income, education, and consumption frequency; they do not consider 50 IBU as high value for craft beer and do directly relate the award presence with the beer sensory quality. The results of conjoint analysis indicate that both groups of consumers attribute greater relative importance to ABV and nonalcoholic beers had lower purchase intentions. Finally, we show that beer with 30 IBU and 4.5% ABV is preferred by both BCs and ECs.

Originality - Our identification about the distinct behaviors of different groups of consumers, based on their consumption time of craft beer, as managerial implications for industries producing craft beer and, as a theoretical contribution, we have defined “BCs” and “ECs” based on the experiences with and durations of craft beer consumption.

Keywords Perception, Purchase intention, Consumer behavior, Market research, Conjoint analysis, Special beer

Paper type Research paper

1. Introduction

Beer is one of the oldest and most often consumed alcoholic beverages worldwide, with origins dating to over nine thousand years ago (Gallone *et al.*, 2016; Hayward *et al.*, 2019). According to the traditional German Beer Purity Law, and also followed by legislations in many countries, beer is currently brewed using basic ingredients such as water, barley, hops, and yeast (Zapata *et al.*, 2019; Humia *et al.*, 2019; Kawa-Rygielska *et al.*, 2019; Humia *et al.*, 2020), besides existing, on the other hand, the possibility of using brewing adjuncts. Nevertheless, beer consumers often search for different and unique characteristics compared to those already found in commercial beer (Ducruet *et al.*, 2017). Thus, so-called craft beer is gaining popularity due to its new styles, unique flavors, and aromas, which result from using new ingredients. In other words, craft beer is often perceived by consumers to originate from small and independent breweries that produce small batches of beer using the highest quality raw ingredients while employing traditional brewing processes to produce an end product that is of superior quality with a distinctive taste and aroma (Gómez-Corona *et al.*, 2016; Morgan *et al.*, 2020).

The global beer market is experiencing a significant increase in craft beer because beer lovers search for products other than those that are produced on a mass scale (Aquilani *et al.*, 2015). In this context, the advantage of craft beer is based on innovation, creativity, typicality, and authenticity due to the variety of alternative raw ingredients and the experimentation with innovative combinations of ingredients and flavors in a final glass (Donadini *et al.*, 2016),

resulting in diversified final products in terms of their style, ingredients, alcohol content, bitterness, body, color, etc.

Beer consumers often purchase this product based on extrinsic attributes (such as brand, price, alcohol content, packaging design, illustrations, origin, type, and production technology—information that is usually on the label and on the packaging itself) and intrinsic attributes (such as color, aroma, bitterness, gasification). In addition, consumer behavior is affected by demographic and socioeconomic contexts (such as sex, age, income, culture, politics, etc.). Although there are relatively few data that demonstrate the effects of extrinsic product factors on craft beer perception, acceptance, and consumption, in other food and beverage categories, extrinsic factors—the information provided to consumers about a product, especially at the point of purchase, through packaging and labeling—are most influential on these response variables. During most beer purchases, consumers thus make their decisions using information about a brand on a bottle or label as indicators of what lies inside (Della Lucia *et al.*, 2010; Thong *et al.*, 2018; Meyerding *et al.*, 2019; Jaeger *et al.*, 2021; Paula *et al.*, 2021).

Several studies have evaluated the roles of the label and/or packaging information in consumer acceptance and purchase intention (Paula *et al.*, 2021). Information on the packaging of some beverages, such as champagne (Lange *et al.*, 2002), wine (Boncinelli *et al.*, 2019), or beer (Della Lucia *et al.*, 2013) regarding a brand that is expressed through label formats, colors, and illustrations (Gamba, 2016), packaging formats, and alcohol levels (Thong *et al.*, 2018), as well as the relation of type and consumption context (Nijman *et al.*, 2019), have also been studied.

Furthermore, consumer research shows that craft beer drinkers seek a wide variety of beer styles and flavors, and demographic variables including gender, age, education level and country have also been employed in beer research (Betancur *et al.*, 2020; Tong, 2022).

Gómez-Corona *et al.* (2016) and Gómez-Corona *et al.* (2017) have found that the unique flavor of craft beer is an important driver of its consumption and that different groups of consumers, based on the type of beer consumed (craft and commercial) and gender, show different consumption behaviors. Regarding gender, different studies have also shown that men outnumber women as consumers of specialty or craft beer (Brasseurs du Nord., 2013; Aquilani *et al.*, 2015). In the same study, Aquilani *et al.* (2015) find that some sociodemographic characteristics, such as age, and consumption habits, are also important factors that influence the choice to consume craft beer. In recent research on declared craft beer drinkers, Jaeger *et al.* (2020) have identified two distinct flavor preference segments, a strong flavor-liking segment, and a lower flavor-impact segment. As a matter of fact, every year a greater number of new craft beers appear in the market (Dúran-Sánchez *et al.*, 2022).

In recent years, the Brazilian craft beer market has grown and distinguished itself from other beer markets. Data from the Ministry of Agriculture, Livestock, and Supply (MAPA) show that in 2020, 204 new breweries were registered in Brazil, leading to 1,383 registered breweries in the country (Brazil, 2021). Data from the last 5 years show that between 2016 and 2020, the number of registered breweries increased by 280%; this significant growth has been accompanied by increased representativeness in consumption, as interest in the purchase of craft beer has also increased and consumer behavior regarding beer consumption has also recently changed in different countries. These changes have arisen from consumers' demands for quality and social habits; since they are willing to pay more than a conventional market price for differentiated products (Carvalho *et al.*, 2018), this has led to an increase in the consumption of craft or premium beer (Zanetta *et al.*, 2021).

Nevertheless, do consumers with different levels of consumption and experience regarding craft beer have the same consumption profiles and characteristics? Given the great diversity of flavors and aromas and styles of craft beer, what influence do attributes such as

alcohol content, International Bitterness Units (IBU) and award seals have on a consumer's purchase intention? Moreover, how are the perceptions of consumers with different levels of experience and consumption of craft beer impacted by these attributes?

There is still a lack of studies on consumers with different consumption experiences, on consumers' perceptions of qualitative beer attributes, such as alcohol content, bitterness, or award seals, or on the relationship of these attributes with consumers' purchase intention. Knowledge of consumer profiles, derived from socioeconomic data, consumption characteristics, and groupings based on similar behaviors can aid beer-producing industries in their product development. Understanding how the qualitative attributes of beer, e.g., alcohol content, bitterness, and award seals, are perceived by consumers can help industries develop products, segment markets, and define marketing strategies.

Therefore, the identification of the specific product quality attributes that consumers, in one or more segments in a target population, have a particular sensitivity and to interest in is paramount to translating these consumer needs, wants, and expectations into manufacturing that produces the best possible cost-competitive product in a relatively short period. Consumers are central to this process; including the voice of consumers in the early stages of new product development as a reference before final design decisions are made is extremely valuable, as this approach aids in ensuring design directions that are on target. Hence, it is paramount for marketers and product developers to release craft beer that matches consumers' demands in terms of not only availability, accessibility, retail price attribution, ingredient formulation, and sensory appeal but also perceived level of novelty due to unconventional ingredients or unexpected flavors (Grunert *et al.*, 2008; Jaeger and MacFie, 2010; Sparke and Menrad, 2011; Donadini *et al.*, 2016).

Thus, the objectives in the present study are to i) identify the profiles and consumption characteristics of beginner consumers and experienced consumers of craft beer, ii) evaluate

the perception and knowledge of craft beer consumers concerning alcohol content, IBU and award seals, and iii) evaluate and quantify the effect of craft beer label attributes (IBU, alcohol content and award seals) on consumers' purchase intention using conjoint analysis.

2. Materials and Methods

This study was approved by the local Human Research Ethics Committee, with permission granted through CAAE 52240521.0.0000.5148. The research was conducted between November 2021 and February 2022 with unpaid participants.

2.1 Study subjects

The target audience of the study was beer consumers aged 18 years or older, and we obtained a total of 291 participants. Nonprobabilistic accessibility sampling was used, and the number of participants was obtained according to the criterion of Hair *et al.* (2005), i.e., for each predictor variable of the questionnaire, at least 5 participants were needed.

According to data from the Ministry of Agriculture, Livestock and Food Supply (Brasil, 2021) in the Yearbook of Beer 2020 document, a significant increase in the number of registered breweries in Brazil began in 2016 and was accompanied by an increase in the consumption of craft beer across the country. Between 2016 and 2020, the registration of new breweries increased by 280%, demonstrating the advancement of the sector. In addition, among the 1,383 breweries registered in the country at the end of 2020, 1,051 (76%) had been registered in the last 5 years.

Moreover, a study conducted by Durán-Sánchez *et al.* (2022) analyzing the worldwide researches on craft beer in Web of Science and Scopus databases showed that 90% of the documents found have been published in the last 5 years.

Therefore, based on their time as a craft beer consumer and their level of the consumption experience, two groups of consumers were interviewed: individuals who had consumed craft beer for less than 5 years (148 respondents) were designated beginner consumers (BCs); individuals who had consumed craft beer for more than 5 years (143 respondents) were designated experienced consumers (ECs). Both consumer groups participated in our market research questionnaire and conjoint analysis, which are presented below.

2.2 Research stages

This research was developed in two stages: a) market research, i.e., the application of a questionnaire to characterize the profiles of the participants and obtain data on their perception and knowledge of craft beer; b) conjoint analysis, i.e., an evaluation of the influence of label factors on the purchase intention toward craft beer.

2.2.1 Market research: questionnaire application

Data collection for our market research was carried out through an online questionnaire that was accessible through social media and smartphone applications. Online data collection offers advantages, e.g., quick data collection and recording, as well as reduced costs compared to other types of research (Eldesouky *et al.*, 2015). Control variables were used at the beginning of the questionnaire. Our exclusion criteria were being younger than 18 years old, not being a beer consumer, or refusing to participate in the study.

The questionnaire was structured in the following sections: a) initial questions for participation control; b) profile of consumers of craft beer; c) consumption characteristics of craft beer; and d) perception and knowledge of beer attributes (alcohol content, IBU, and

award seals). In total, the questionnaire had 28 predictor variables that required a minimum of 140 participants. As mentioned above, 291 people completed the questionnaire.

2.2.1.1 Data analysis

In the analysis of the market research data, frequency analysis and cross-tabulation techniques were used, in addition to a chi-square test with a significance level of 5% that was conducted via IBM[®] SPSS[®] Statistics 20.0 software.

2.2.2 Conjoint analysis

Conjoint analysis is a very powerful tool for obtaining information regarding the effect of different product attributes on the fondness and/or purchase intention toward food products (Green and Srinivasan, 1978; Louviere, 1988; Naes *et al.*, 2001). In most cases, different consumer groups respond differently to various attribute combinations. Hence, conjoint analysis is of great importance for generating marketing strategies to identify market segments and interpret them in terms of demographic or other external information, called consumer variables. Indeed, conjoint analysis has proven to lead to great commercial success (Wittink *et al.*, 1994).

Conjoint analysis was performed to evaluate the influence of craft beer label factors on consumers' purchase intention.

2.2.2.1 Choice of factors and levels

Table 1 shows the factors and levels of the labels that were evaluated in conjoint analysis. The factors chosen were IBU, alcohol content, and award seals; these are the label factors that most influence consumers during the purchase or consumption of craft beer, according Haddad *et al.* (2022). Studies by Della Lucia *et al.* (2010), Thong *et al.* (2018),

Meyerding *et al.* (2019), Jaeger *et al.* (2021), and Paula *et al.* (2021) support selection of these research factors.

Table 1. Label factors and their respective levels

Factors	Levels
IBU	10
	30
	50
Alcohol content	0.0%
	4.5%
	7.0%
Award seal	No information
	1st place in national competition
	1st place in international competition
	Gold medal

The levels of IBU and alcohol content were defined by considering the large presence of these values in the craft beer market as well as the increasing presence of nonalcoholic beer in this market. Regarding award seals, three different types of seals that are found in the market were chosen in addition to the lack of a seal. Thus, the choice of factor levels regarding these values and information in commercial products was justified.

2.2.2.2 Method of data collection and experimental design

To define the treatments of the study, the full profile data collection method was used (Green and Srinivasan, 1978); each treatment was formed by the combination of all factors

and levels, for a total of 36 treatments. Given the high number of treatments, we decided to work with the fractional factorial (1/4 of the complete factorial) formed by a subset of 9 conveniently selected treatments (Table 2) to estimate all the preference coefficients.

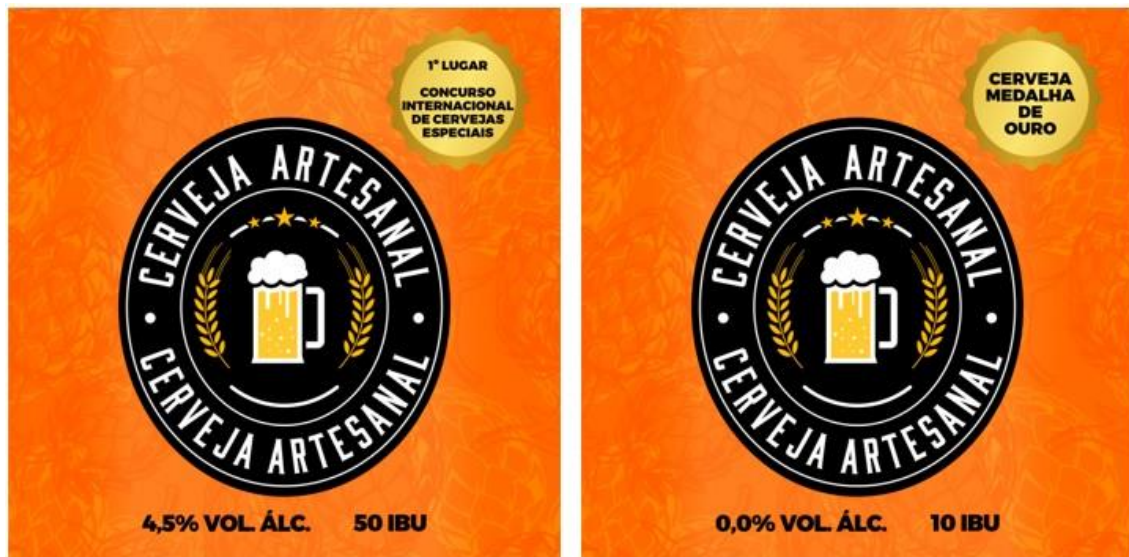
Table 2. Treatments evaluated in the study

Label (treatment)	Factors/Levels		
	IBU	Alcohol content	Award seal
1	50	7.0%	Gold medal
2	50	0.0%	No information
3	50	4.5%	1st place in international competition
4	30	7.0%	1st place in national competition
5	30	0.0%	1st place in international competition
6	30	4.5%	No information
7	10	7.0%	No information
8	10	0.0%	Gold medal
9	10	4.5%	1st place in national competition

2.2.2.3 Elaboration and evaluation of the treatments used in the study

Nine craft beer labels were prepared according to the treatment descriptions in Table 2 using CorelDRAW Graphics Suite® software version 20.0, 2018. On the labels, there was variation only in the IBU, alcohol content, and beer award seal information. Figure 1 shows two examples of the labels that were evaluated in the study.

Figure 1. Examples of evaluated labels via conjoint analysis: Treatment 3 (left) and treatment 8 (right)



The treatments (labels) were evaluated by the study participants online using the Google Docs tool, and their purchase intention toward a product was evaluated using a 9-point structured scale, ranging from definitely not buying (1) to definitely buying (9). The treatments (labels) were presented in a balanced way to prevent any effects due to the order of presentation and the residual effect. In addition, before the presentation of each treatment label, an initial label that was identical to the treatment label was presented, but without information on the IBU, alcohol content, or award seals (white label) to remove the effect of the first sample (Deliza, 1996).

2.2.2.4 Statistical analysis of the data

To evaluate the data from our conjoint analysis, the additive model was used as a rule of composition, and an aggregate analysis was performed (Moore, 1980) for each consumer group (beginner consumers and experienced consumers). The results of the conjoint analysis were thus evaluated to obtain the contribution of each level of each factor (*part-worths*) and

the relative importance of each factor by using the Statistical Analysis System (SAS/STAT®) (SAS Institute Inc, 2022) software, version 9.4.

3. Results and Discussion

3.1 Participants profile

The socioeconomic data of the 291 craft beer consumers who participated in the study are shown in Table 3. Most participants were male, aged between 26 and 35 years, and had a monthly family income between R\$3.135.01 and R\$6.270. Regarding education, 51.8% completed or were attending graduate school. Studies conducted in Brazil (Sebrae, 2014; Carvalho *et al.*, 2018), Mexico (Gómez-Corona *et al.*, 2016), and Italy (Aquilani *et al.*, 2015) show similar socioeconomic profiles of craft beer consumers and study participants, who have consisted mainly of male individuals aged up to 35 years with a high monthly family income and higher or graduate education. Typically, men are more likely to drink beer than women, and beer is more popular with consumers younger than 45 than with those over 45 (Colen and Swinnen, 2011; Poelmans and Rousseau, 2017).

Table 3. Socioeconomic data of the participants

VARIABLE	DESCRIPTION	FREQUENCY (%)
Gender	Male	57
	Female	43
Age group	18–25 years	14.8
	26–35 years	41.2
	36–45 years	29.3
	46–55 years	10.6
	56–65 years	3.8
	Over 65 years	0.3
Monthly family income	Up to R\$1.045	1.9
	R\$1.045.01–R\$2.090	10.6
	R\$2.090.01–R\$3.135	14.1
	R\$3.135.01–R\$6.270	26.2
	R\$6.270.01–R\$10.450	15.4
	R\$10.450.01–R\$15.675	17.7
	More than R\$15.675	14.1
Education	Elementary education	0.3
	Secondary education	5.1
	Incomplete higher education	14.5
	Complete higher education	28.3
	Post graduate	51.8

Regarding their time of consumption, 50.9% of the participants reported having been consumers of craft beer for less than 5 years, while 49.1% reported having consumed it for more than 5 years, thus defining the two groups of consumers that we used in our analyses.

3.2 Craft beer consumption experience: Consumers' profile, perception, and knowledge

As mentioned above, using consumption experience as a criterion, two consumer groups were defined: individuals who had consumed craft beer for less than 5 years (BCs, 148 consumers) and individuals who had consumed craft beer for more than 5 years (ECs, 143 consumers).

Below, Table 4 shows the socioeconomic data, and Table 5 shows the characteristics of beer consumption among both groups (BCs and ECs).

Table 4. Socioeconomic profiles of craft beer consumers groups

VARIABLE	DESCRIPTION	BC (%) (n=148)	EC (%) (n=143)	p-value*
Gender	Male	42.6	73.4	<i>p</i>≤0.05
	Female	57.4	26.6	
Age group	18–25 years	27.0	2.1	<i>p</i>≤0.05
	26–35 years	39.2	44.8	
	36–45 years	20.3	38.5	
	46–55 years	10.8	10.5	
	56–65 years	2.7	4.2	
Monthly income family	Up to R\$1.045	4.1	--	<i>p</i>≤0.05
	R\$1.045.01–R\$2.090	14.9	6.3	
	R\$2.090.01–R\$3.135	16.9	10.5	
	R\$3.135.01–R\$6.270	26.4	24.5	
	R\$6.270.01–R\$10.450	14.2	16.8	
	R\$10.450.01–R\$15.675	14.2	21.7	
	More than R\$15.675	9.5	20.3	
Education	Elementary education	0.7	--	<i>p</i>≤0.05
	Secondary education	4.7	4.9	
	Incomplete education	20.9	7.0	
	Complete education	27.7	30.8	
	Post graduate	45.9	57.3	

* Confidence level $\geq 95\%$: Results with p -value ≤ 0.05 .

BC: Beginner consumer who has consumed craft beer for less than 5 years.

EC: Experienced consumer who has consumed craft beer for more than 5 years.

Table 5. Consumption characteristics of craft beer consumers groups

VARIABLE	DESCRIPTION	BC (%) (n=148)	EC (%) (n=143)	p-value*
Frequency of consumption (craft beer)	Up to 1 time per month	57.4	30.1	<i>p</i>≤0.05
	2 times per month up to 1 time per week	34.5	34.3	
	2 or more times per week	8.1	35.7	
Frequency of consumption (commercial beer)	Does not consume	1.4	4.2	0.260
	Up to 1 time per month	18.2	23.8	
	2 times per month up to 1 time per week	52.7	45.5	
	2 or more times per week	27.7	26.6	
Do you observe information on beer labels at the time of purchase or consumption?	Not observed	11.5	4.2	<i>p</i>≤0.05
	Occasionally	29.1	25.2	
	Frequently	31.8	29.4	
	Always	27.7	41.3	
Do you observe the IBU?	Yes	46.6	69.2	<i>p</i>≤0.05
	No	53.4	30.8	
Do you observe the EBC?	Yes	14.2	21.7	0.095
	No	85.8	78.3	
Do you observe the alcohol content?	Yes	72.3	81.1	0.075
	No	27.7	18.9	
Do you observe the ingredients?	Yes	71.6	70.6	0.852
	No	28.4	29.4	
Do you observe the award seal?	Yes	23.6	35	<i>p</i>≤0.05

	No	76.4	65	
Do you observe the style?	Yes	57.4	83.2	$p \leq 0.05$
	No	42.6	16.8	

* Confidence level $\geq 95\%$: results with p -value ≤ 0.05 .

BC: Beginner consumer who has consumed craft beer for less than 5 years.

EC: Experienced consumer who has consumed craft beer for more than 5 years.

IBU: International Bitterness Units.

EBC: European Brewing Convention.

Regarding the socioeconomic profiles of BCs (who have consumed craft beer for less than 5 years) and ECs (who have consumed craft beer for more than 5 years), there was a significant difference in the variables of gender, age group, income, and education. The first-time consumers of craft beer were mostly female and of a lower age (18-35 years), monthly family income, and education. On the other hand, the ECs were predominantly male individuals aged between 26 and 45 years with a higher income and educational level.

The characteristics of beer consumption were also different for the two groups of consumers. There was a significant difference in the frequency of consumption of craft beer and in the observation of labels and their attributes at the purchase time. It was found that most beginner consumers of craft beer consume it a maximum of 1 time per month and that only 8.1% consume it 2 times or more per week, demonstrating that many consumers who are just entering the “universe of craft beer” have a low consumption of the product.

On the other hand, 35.7% of experienced consumers consume craft beer at least twice a week, a result that is similar to that of Aquilani *et al.* (2015), who, analyzing the Italian consumer market for specialty beer, has observed that 24.5% of beer drinkers consumed up to 4 times a week. According to Gómez-Corona *et al.* (2017), several studies have pointed out that young adult men drink more often than young women in almost every society, aligning with our observation that the group that consumes craft beer for a longer time and to a greater

extent is composed predominantly of men. However, according to Gómez-Corona *et al.* (2016), there is no gender difference for industrial beer consumers, suggesting that attitudes toward craft beer consumption have a gender difference that does not exist for industrial beer.

Beer consumed in Brazil is typically the American Lager type, which has a light golden color, light taste, and low alcohol content at approximately 4.0% alcohol by volume (ABV) (Mega *et al.*, 2011). To meet this identity standard, some Brazilian breweries use unmalted cereals in their beer formulation, characterizing them as the commercial beer that still entails greater consumption among Brazilians than craft beer. However, the consumption of craft beer has increased in recent years, following a movement that was initiated in the USA and the United Kingdom in the 1970s called the “Small Brewery Revolution” (Zanetta *et al.*, 2021).

The labels observation was also different between the two groups. Most BCs perform their observation frequently, but 11.5% simply do not observe label information at the time of purchase or consumption. From another perspective, most ECs always perform their observation, indicating that experienced consumers of the product pay more attention to a label at the time of purchase or consumption of craft beer. One of the main factors that differentiate craft from traditional beer is the different beer styles that confer a different aroma, flavor, and texture of the beverage (Carvalho *et al.*, 2018). This is what more experienced consumers of craft beer were shown to value in the present study.

Regarding the beer attributes that are observed on a product label, which entailed a significant difference between the groups, IBU and beer style were more observed by experienced consumers, while award seal was less observed by beginner consumers.

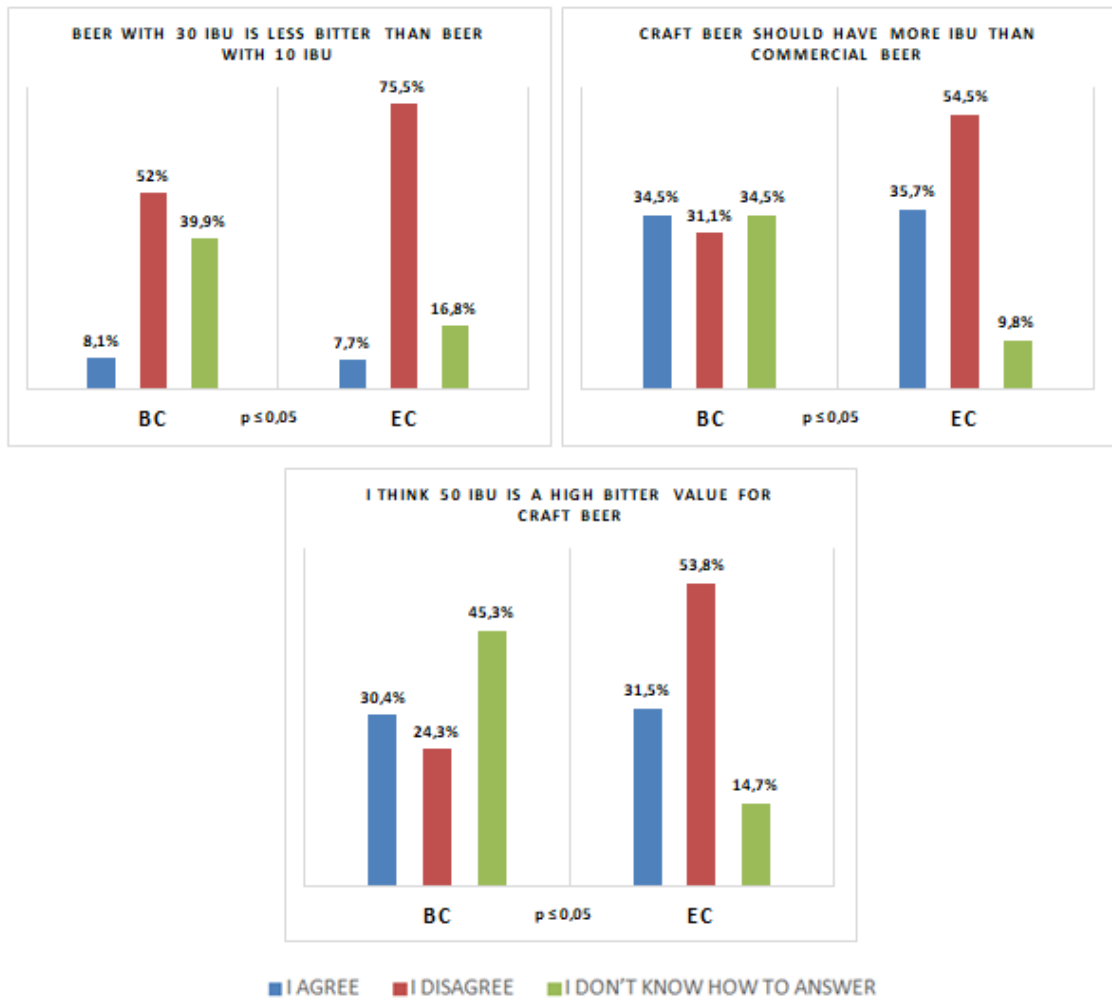
Several studies have shown that various elements of beer information can have profound effects on the consumer-centered evaluative properties of beer (Jaeger *et al.*, 2021). According to Poelmans and Rousseau (2017), product characteristics such as color, alcohol

content, and price can play an important role in consumers' selection of a beer to buy and/or consume. In addition, the wide variety of craft beer styles, which are produced with numerous ingredients, some of which have high levels of hops, strong flavor profiles, and/or high alcohol content, highlights the importance of observing attributes such as alcohol content, ingredients, style and IBU, as demonstrated in the present study.

Regarding their perception and knowledge of IBU (Figure 2), alcohol content (Figure 3), and beer award seals (Figure 4), the consumer groups also showed differences.

During the evaluation of the perception and knowledge of consumers on IBU, alcohol content, and award seals, 9 statements were made; 5 showed a significant difference ($p \leq 0.05$) between the groups of consumers, as shown in Figures 2, 3, and 4.

Figure 2. Perception and knowledge of consumer groups regarding IBU statements and p -value, obtained by chi-square test



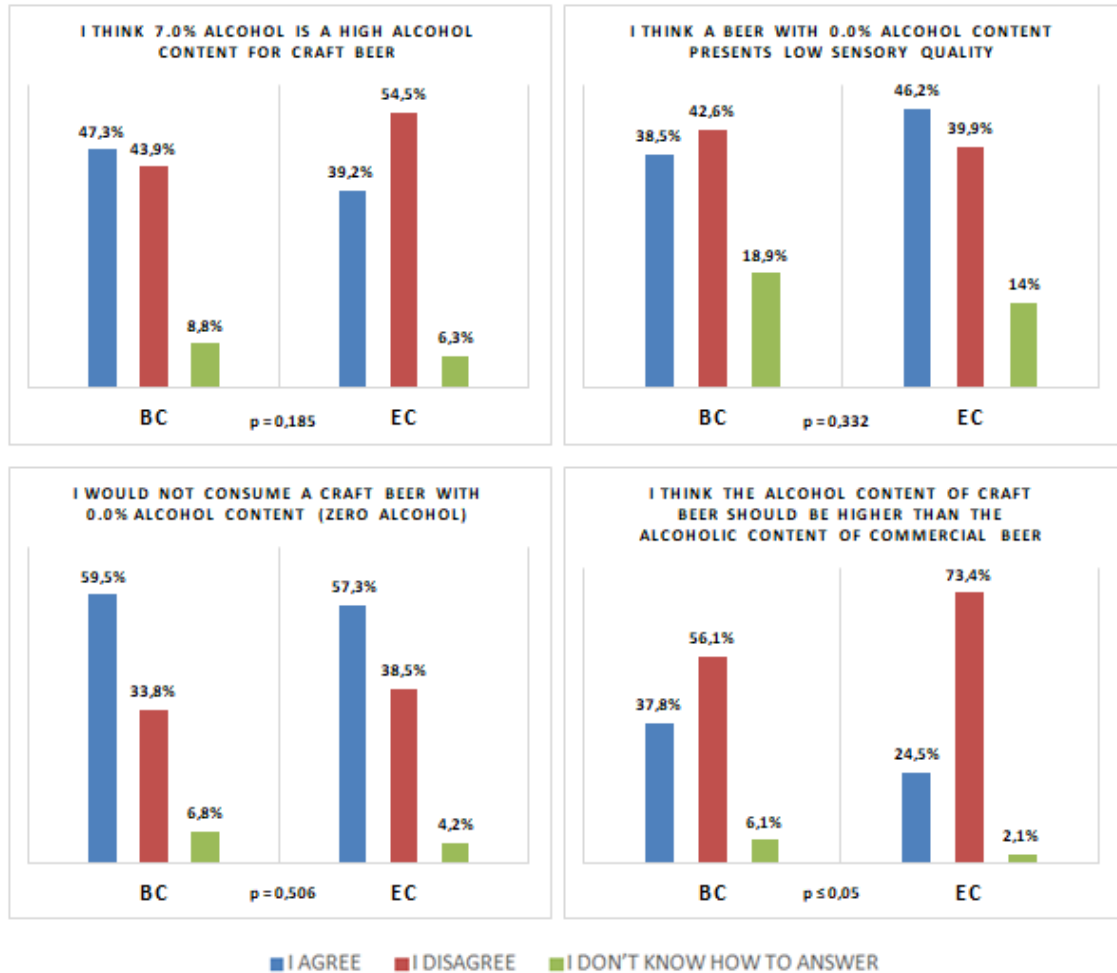
Confidence level $\geq 95\%$: result with p -value ≤ 0.05 .

BC: Beginner consumer who has consumed craft beer for less than 5 years.

EC: Experienced consumer who has consumed craft beer for more than 5 years.

IBU: International Bitterness Units.

Figure 3. Perception and knowledge of consumer groups regarding alcohol content statements and p -value, obtained by chi-square test

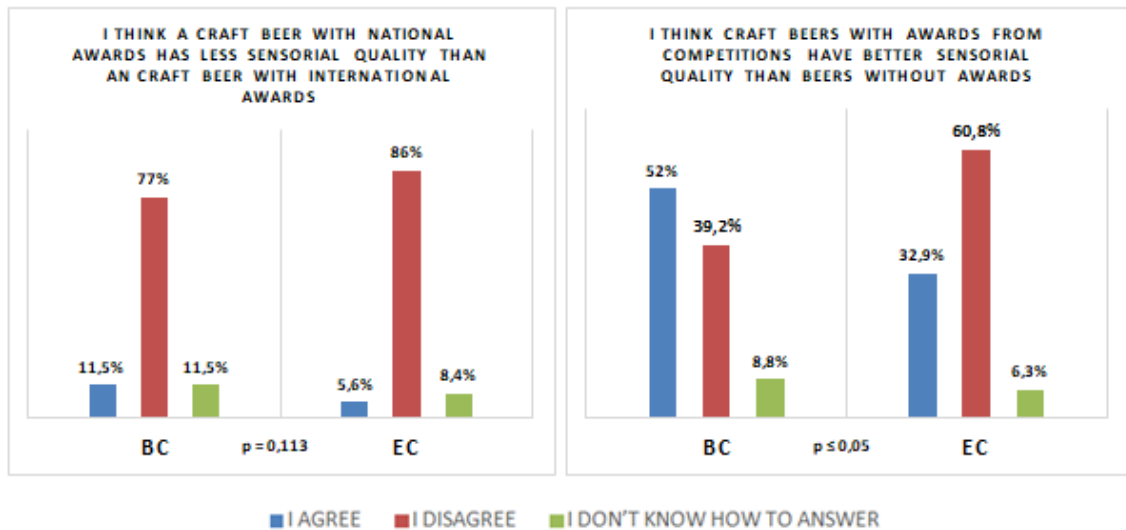


Confidence level $\geq 95\%$: result with p -value ≤ 0.05 .

BC: Beginner consumer who has consumed craft beer for less than 5 years.

EC: Experienced consumer who has consumed craft beer for more than 5 years.

Figure 4. Perception and knowledge of consumer groups regarding award seal statements and p -value, obtained by chi-square test



Confidence level $\geq 95\%$: result with p -value ≤ 0.05 .

BC: Beginner consumer who has consumed craft beer for less than 5 years.

EC: Experienced consumer who has consumed craft beer for more than 5 years.

It was found that for IBU, there was a significant difference in the perception and knowledge of the two groups. There was a higher incidence of “I don’t know how to answer” responses for beginning consumers, showing how IBU may still be unknown to this audience. As observed in Figure 2, approximately 40% of BCs did not know that a beer with 30 IBU is more bitter than one with 10 IBU. For experienced consumers, this attribute seems to be better known and well interpreted in terms of its meaning, e.g., a value of 50 IBU is not high for most consumers in this group—in contrast, most BCs did not know how to respond to this item.

Regarding alcohol content (Figure 3), there was a significant difference ($p \leq 0.05$) between the groups; 73.4% of experienced consumers disagree that craft beer should have a higher alcohol content than commercial beer. Furthermore, most consumers in this group do not consider 7.0% alcohol a high alcohol content for craft beer, which is similar to our results

for IBU. In addition, 59.5% of BCs and 57.3% of ECs stated that they would not consume a craft beer with 0.0% alcohol content.

When evaluating award seals on beer labels, as illustrated under perception and knowledge in Figure 4, most consumers in both groups disagree that beer with a national competition award seal has a lower sensory quality than beer with an international competition award seal. In addition, approximately 61% of experienced consumers disagree that craft beer with a competition award seal has superior sensory quality compared to beer without an award. Thus, we observed that craft beer beginner consumer attribute a higher quality to beer that has an award seal than do older consumers, demonstrating the importance of this attribute on a beer label for this consumer audience.

3.3 Conjoint analysis

Conjoint analysis was performed to evaluate the influence of craft beer label factors on consumers' purchase intention. Table 6 shows the results of the aggregate analyses for each group via the contribution of each level of each factor and the relative importance of each factor.

Table 6. Results of the aggregate analysis of the formed groups in conjoint analysis

	BC (<i>n</i> =148)	EC (<i>n</i> =143)
% of total consumers	50.9%	49.1%
Attributes and levels	Part-worths	
IBU		
10	-0.0248	-0.3182
30	0.0676	0.1760
50	-0.0428	0.1422
<i>Relative importance</i>	<i>2.54%</i>	<i>10.70%</i>
Alcohol content (%)		
0.0	-2.1914	-2.0186
4.5	1.2455	1.0594
7.0	0.9459	0.9592
<i>Relative importance</i>	<i>79.11%</i>	<i>66.65%</i>
Award seal		
1st place in international competition	0.0895	0.3374
1st place in the national competition	0.1774	0.2010
Gold medal	0.2652	0.1696
No information	-0.5321	-0.7080
<i>Relative importance</i>	<i>18.35%</i>	<i>22.65%</i>

Negative signs indicate a negative impact on purchase intention.

BC: Beginner consumer who has consumed craft beer for less than 5 years.

EC: Experienced consumer who has consumed craft beer for more than 5 years.

IBU: International Bitterness Units.

Accordingly, it was found that BCs have higher purchase intention for a beer with 30 IBU, 4.5% alcohol content, and gold medal award seals. Experienced consumers also demonstrate higher purchase intention for a beer with 30 IBU and 4.5% alcohol content, differing only in terms of award seal, i.e., a seal representing 1st place in an international competition has the greatest positive impact on ECs' purchase intention toward a product.

For both groups, alcohol content was of greater relative importance than the other attributes (79.11% for BCs and 66.65% for ECs). Thus, both groups of consumers are very

influenced by alcohol content when determining their purchase intention toward craft beer. Regarding alcohol content, a 0.0% alcohol factor harmed purchase intention for both groups of consumers. Similar to their intention to purchase nonalcoholic beer, as Silva *et al.* (2017) observed, an ordinary beer that was labeled nonalcoholic without the knowledge of consumers produced more negative emotional responses when consumed. In addition, the acceptance of nonalcoholic beer increased when it was incorrectly labeled as common beer.

Regarding beer with 0.0% ABV, the result obtained regarding purchase intention aligns with finding concerning perception and knowledge of alcohol content (Figure 3); approximately 60% of the consumers in both groups stated that they would not consume a craft beer with 0.0% alcohol content. However, some authors have reported an increase in global interest in nonalcoholic or low-alcohol beer (Merinas-Amo *et al.*, 2022), in contrast to our finding of a negative impact of nonalcoholic beer on purchase intention. Such growing interest in nonalcoholic beer can be observed among a specific group of consumers seeking low-calorie beer since nonalcoholic beer has a lower carbohydrate content (Lamiquiz-Moneo *et al.*, 2022), and in an even greater proportion among consumers seeking improved healthiness. Such behavior is contrary to our findings that the main distinction between beer consumers is based on their consumption experience. Another specific nonalcoholic beer consumer public is who do not consume alcoholic beverages but still consume alcohol-free beer.

Regarding the IBU and award seal factors, both consumer groups attributed a negative impact to the value of 10 IBU and the lack of an award seal, with IBU having the least relative importance for all consumers. The low relative importance of IBU may be related to a lack of knowledge about the attribute, especially among BCs (RI = 2.54%), as shown in evaluation of their perception and knowledge of beer attributes.

The International Bitterness Unit is an analytical measure of the amount of bitterness that brewers expect in their beer and offers an approximate value of beer's iso- α -acids by milligrams per liter. The bitter taste of beer is an important flavor attribute that consumers expect and enjoy to varying degrees during consumption (Hough *et al.*, 1982; Hough *et al.*, 2012; Oladokun *et al.*, 2017). According to Oladokun *et al.* (2016), the meaning of the "quality" or "character" of bitterness remains unclear, even to many in the brewing industry who often use the term. However, bitterness perception is multifaceted. Thus, the perception of bitterness seems to be different for different beer consumers, since experienced consumers of craft beer seem to know and attribute greater importance to IBU.

4. Conclusion

Consumers with different levels of experience and consumption time of craft beer have different socioeconomic profiles and consumption characteristics. It was shown that individuals who have consumed craft beer for less than 5 years, i.e., beginner consumers, mostly include women of lower age, monthly income, and education; in contrast, the group of individuals who have consumed craft beer for more than 5 years, called experienced consumers, primarily contains men of higher age, monthly income, and education. In addition, the frequency of consumption among beginning beer consumers is lower than that of experienced individuals who have been immersed in the world of craft beer for a longer period.

Regarding the attributes of alcohol content, IBU, and award seals, it was found that these groups also have different perceptions and knowledge levels. Beginning consumers of craft beer do not deeply understand the IBU attribute, consider 7.0% alcohol a high alcohol content for craft beer, and attribute a superior quality to beer with an award seal. On the other hand, experienced consumers have knowledge about the bitterness index of beer, do not

consider 50 IBU and 7.0% alcohol content high values for craft beer and disagree with the direct relationship between award seals and the sensory quality of beer.

Finally, conjoint analysis has demonstrated that beginner consumers have greater purchase intention toward beer with 30 IBU, 4.5% alcohol content, and a gold medal award seal and that experienced consumers prefer beer with 30 IBU, 4.5% alcohol content, and a 1st place seal from an international competition. In addition, alcohol content information has greater relative importance for purchase intention than IBU and award seals, while nonalcoholic beer has the lowest purchase intention among both groups of consumers. Beer with a low bitterness index (10 IBU) and no award seals also generates low purchase intention.

The identification about the distinct behaviors of different groups of consumers, based on their levels of experience and consumption time of craft beer, as managerial implications for the industries producing craft beer; can facilitate understanding and enable the creation of efficient marketing campaigns and market niches in the brewing industry based on different consumer profiles. Moreover, as a theoretical contribution, it was defined “beginner consumers” and “experienced consumers” based on the experiences with and durations of craft beer consumption, which had not yet been accomplished in the literature. In addition, we not only demonstrate how certain qualitative attributes—bitterness, alcohol content, and award seals—are interpreted by consumers but also evaluate the relationship of these attributes with craft beer purchase intention.

The results obtained in conjoint analysis, therefore, demonstrate the need for brewing industries to invest in marketing strategies to increase consumers’ awareness of IBU, which will make them more aware of their options and facilitate their purchasing process. In addition, regarding nonalcoholic beer, more research is needed to better understand the perception of consumers and thus increase the consumption of this type of product. Future

studies could be performed with methodological optimization by either increasing the respondent audience size, expanding the investigation of the attributes of IBU, alcohol content, and award seals, or evaluating a more extensive set of additional qualitative beer attributes, e.g., brand, style, or color, in addition to explore BC and EC terms definition based on other consumer variables as consumption frequency and consumed beer style.

References

- Aquilani, B., Laureti, T., Poponi, S. and Secondi, L. (2015), “Beer choice and consumption determinants when craft beers are tasted: an exploratory study of consumer preferences”, *Food Quality and Preference*, Vol. 41, pp. 214-224, doi: 10.1016/j.foodqual.2014.12.005.
- Betancur, M.I., Motoki, K., Spence, C. and Velasco, C. (2020), “Factors influencing the choice of beer: a review”, *Food Research International*, Vol.137, 109367, doi: 101016/j.foodres.2020.109367.
- Boncinelli, F., Dominici, A., Gerini, F. and Marone, E. (2019), “Consumers wine preferences according to purchase occasion: Personal consumption and gift-giving”, *Food Quality and Preference*, Vol. 71, pp. 270–278, doi: 10.1016/j.foodqual.2018.07.013.
- Brasseurs Du Nord. (2013), “Notoriété, pénétration & image des bières de Spécialités Régionales”, available at:
<http://www.brasseursdunord.fr/wp-content/uploads/2013/01/Tronc-commun1.pdf>
 (accessed 12 June 2021).
- Brazil (2021), Ministry of Agriculture, “Livestock and supply. Beer yearbook in Brazil 2020”, available at: <https://www.gov.br/agricultura/pt-br/assuntos/noticias/com-crescimento-de-14-4-em-2020-numero-de-cervejarias-registradas-no-brasil-passa-de-1-3-mil/anuariocerveja2.pdf> (accessed 30 May 2022).

- Carvalho, N.B., Minim, L.A., Nascimento, M., Ferreira, G.H. de C. and Minim, V.P.R. (2018), “Characterization of the consumer market and motivations for the consumption of craft beer”, *British Food Journal*, Vol. 120 No. 2, pp. 378–391, doi: 10.1108/BFJ-04-2017-0205.
- Colen, L. and Swinnen, J. (2011), Beer-drinking nations: The determinants of global beer consumption, Swinnen, J.F.M. (Ed.), *The Economics of Beer*, Oxford University Press, Oxford, UK, pp. 123–140.
- Deliza, R. (1996), “The effects of expectation on sensory perception and acceptance”, University of Reading, 198p. PhD thesis.
- Della Lucia, S.M., Minim, V.P.R., Silva, C.H.O., Minim, L.A. and Ceresino, E.B. (2010), “Expectativas geradas pela marca sobre a aceitabilidade de cerveja: Estudo da interação entre características não sensoriais e o comportamento do consumidor”, *Boletim do Centro de Pesquisa e Processamento de Alimentos*, Vol. 28 No. 1, pp. 11–24, doi: 10.5380/cep.v28i1.17893.
- Della Lucia, S.M., Minim, V.P.R., Silva, C.H.O., Minim, L.A. and Cipriano, P.A. (2013), “Ordered probit regression analysis of the effect of brand name on beer acceptance by consumers”, *Food Science and Technology*, Vol. 33 No. 3, pp. 586–591, doi: 10.1590/S0101-20612013005000068.
- Donadini, G., Fumi, M.D., Kordialik-Bogacka, E., Maggi, L., Lambri, M. and Sckokai, P. (2016), “Consumer interest in specialty beers in three European markets”, *Food Research International*, Vol. 85, pp. 301–314, doi: 10.1016/j.foodres.2016.04.029.
- Ducruet, J., Rébénaque, P., Diserens, S., Kosinska-Cagnazzo, A., Héritier, I. and Andlauer, W. (2017), “Amber ale beer enriched with goji berries – The effect on bioactive compound content and sensorial properties”, *Food Chemistry*, Vol. 226, pp. 109–118, doi: 10.1016/j.foodchem.2017.01.047.

- Durán-Sánchez, A., Río-Rama, M.C., Álvarez-García, J. and Oliveira, C. (2022), “Analysis of worldwide research on craft beer”, *Sage open*, Vol. 12 No. 2, pp. 1-14, doi: 10.1177/21582440221108154.
- Eldesouky, A., Pulido, A.F. and Mesias, F.J. (2015), “The role of packaging and presentation format in consumers preferences for food: an application of projective techniques”, *Journal of Sensory Studies*, Vol. 30 No. 5, pp. 360–369, doi: 10.1111/joss.12162.
- Gallone, B., Steensels, J., Prah, T., Soriaga, L., Saels, V., Herrera-Malaver, B., Merleyede, A., Roncoroni, M., Voordeckers, K., Miragila, L., Telling, C., Steffy, B., Taylor, M., Schwartz, Richardson, I., White, C., Baele, G., Maere, S. and Verstrepen, K.J. (2016), “Domestication and divergence of *Saccharomyces cerevisiae* beer yeasts”, *Cell*, Vol. 166 No. 6, pp. 1397–1410, doi: 10.1016/j.cell.2016.08.020.e16.
- Gamba, M.M. (2016), “Cerveja artesanal com pimenta rosa: processamento, características físico-químicas e estudo de mercado”, Federal University of Espírito Santo, 129 p. PhD Dissertation.
- Gómez-Corona, C., Escalona-Buendía, H.B., García, M., Chollet, S. and Valentin, D. (2016), “Craft vs. industrial: Habits, attitudes and motivations towards beer consumption in Mexico”, *Appetite*, Vol. 96, pp. 358-367, doi: 10.1016/j.appet.2015.10.002.
- Gómez-Corona, C., Valentin, D., Escalona-Buendía, H.B. and Chollet, S. (2017), “The role of gender and product consumption in the mental representation of industrial and craft beers: An exploratory study with Mexican consumers”, *Food Quality and Preference*, Vol. 60, pp. 31-39, doi: 10.1016/j.foodqual.2017.03.008.
- Green, P.E. and Srinivasan, V. (1978), “Conjoint analysis in consumer research. Issues and outlook”, *Journal of Consumer Research*, Vol. 5 No. 2, pp. 103-123, doi: 10.1086/208721.

- Grunert, K.G., Jensen, B.B., Sonne, A.-M., Brunsø, K., Byrne, D.V., Clausen, C., Clausen, C., Friis, A., Holm, L., Hyldig, G., Kristensen, N.H., Lettl, C. and Scholderer, J. (2008), “User-oriented innovation in the food sector: Relevant streams of research and an agenda for future work”, *Trends in Food Science & Technology*, Vol. 19 No. 11, pp. 590–602, doi: 10.1016/j.tifs.2008.03.008.
- Haddad, F.F., Ribeiro, A.P.L., Vieira, K.C., Pereira, R.C. and Carneiro, J.D.S. (2022), “Specialty beers market: a comparative study of producers and consumers behavior”, *British Food Journal*, Vol. ahead-of-print No. ahead-of-print, doi: 10.1108/BFJ-10-2021-1090.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (2005), *Análise multivariada de dados*, Bookman, Porto Alegre, RS.
- Hayward, L., Wedel, A. and Mcsweeney, M.B. (2019), “Acceptability of beer produced with dandelion, nettle, and sage”, *International Journal of Gastronomy and Food Science*, Vol. 18, doi: 10.1016/j.ijgfs.2019.100180.
- Hough, J.S., Briggs, D.E., Stevens, R. and Young, T.W. (1982), Beer flavour and beer quality, *Malting and brewing science*, Springer, Boston, MA, pp. 839–883.
- Hough, J.S., Briggs, D.E., Stevens, R. and Young, T.W. (2012), *Malting and brewing science*, Springer, Boston, MA.
- Humia, B.V., Santos, K.S., Barbosa, A.M., Sawata, M., Mendonça, M. de C. and Padilha, F.F. (2019), “Beer molecules and its sensory and biological properties: A review”, *Molecules*, Vol. 24 No. 8, doi: 10.3390/molecules24081568.
- Humia, B.V., Santos, K.S., Schneider, J.K., Leal, I.L., Barreto, G. de A., Batista, T., Machado, B.A.S., Druziand, J.I., Krausea, L.C., Mendonça, M. da C. and Padilha, F.F. (2020), “Physicochemical and sensory profile of Beauregard sweet potato beer”, *Food Chemistry*, Vol. 312, doi: 10.1016/j.foodchem.2019.126087.

- Jaeger, S.R. and Macfie, H. (2010), *Consumer-driven innovation in food and personal care products*, Woodhead Publishing, Cambridge, UK.
- Jaeger, S.R., Worch, T., Phelps, T., Jin, D. and Cardello, A.V. (2021), “Effects of “craft” vs. “traditional” labels to beer consumers with different flavor preferences: A comprehensive multi-response approach”, *Food Quality and Preference*, Vol. 87, doi: 10.1016/j.foodqual.2020.104043.
- Jaeger, S.R., Worch, T., Phelps, T., Jin, D. and Cardello, A.V. (2020), “Preference segments among declared craft beer drinkers: Perceptual, attitudinal and behavioral responses underlying craft-style vs. traditional-style flavor preferences”, *Food Quality and Preference*, Vol. 82, doi: 10.1016/j.foodqual.2020.103884.
- Kawa-Rygielska, J., Adamenko, K., Kucharska, A.Z., Prorok, P. and Piórecki, N. (2019), “Physicochemical and antioxidative properties of Cornelian cherry beer”, *Food Chemistry*, Vol. 281, pp. 147-153, doi: 10.1016/j.foodchem.2018.12.093.
- Lamiquiz-Moneo, I., Pérez-Calahorra, S., Gracia-Rubio, I., Cebollad, A., Bea, A.M., Fumanal, A., Ferrer-Mairal, A., Prieto-Martín, A., Sanz-Fernández, M.L., Cénarro, A., Civeira, F. and Mateo-Gallego, R. (2022), “Effect of the consumption of alcohol-free beers with different carbohydrate composition on postprandial metabolic response”, *Nutrients*, Vol. 14 No. 05, doi: 10.3390/nu14051046.
- Lange, C., Martin, C., Chabanet, C., Combris, P. and Issanchou, S. (2002). “Impact of the information provided to consumers on their willingness to pay for Champagne: Comparison with hedonic scores”, *Food Quality and Preference*, Vol. 13 No. 7–8, pp. 597–608, doi: 10.1016/S0950-3293(02)00059-9.
- Louviere, J.J. (1988), *Analysing decision-making metric conjoint analysis*, Sage Publications, Newbury Park, CA.

- Mega, J.F., Neves, E. and Andrade, C.J. (2011), “A produção da cerveja no Brasil”, *CITINO - Ciência, Tecnologia, Inovação e Oportunidade*, Vol. 1 No. 1, pp. 1-6.
- Merinas-Amo, T., Celestino, M.D.R., Font, R. and Alonso-Moraga, A. (2022), “Safety and protective activities of manufactured alcohol-free beer”, *Processes*, Vol. 10 No. 331, pp. 1-21, doi: 10.3390/pr10020331.
- Meyerding, S.G.H., Bauchrowitz, A. and Lehberger, M. (2019), “Consumer preferences for beer attributes in Germany: A conjoint and latent class approach”, *Journal of Retailing and Consumer Services*, Vol. 47, pp. 229–240, doi: 10.1016/j.jretconser.2018.12.001.
- Moore, W.L. (1980), “Levels of aggregation in conjoint analysis: an empirical comparison”, *Journal of Marketing Research*, Vol. 17 No. 4, pp. 516-523, doi: 10.2307/3150504.
- Morgan, D.R., Lane, E.F. and Styles, D. (2020), “Crafty marketing: An evaluation of distinctive criteria for craft beer”, *Food Reviews International*, Vol. 38 No. 5, pp. 913-929, doi: 10.1080/87559129.2020.1753207.
- Naes, T., Kubberrod, E. and Sivertsen, H. (2001), “Identifying and interpreting market segments using conjoint analysis”, *Food Quality and Preference*, Vol. 12 No. 2, pp. 133-143, doi: 10.1016/S0950-3293(00)00039-2.
- Nijman, M., James, S., Dehrmann, F., Smart, K., Ford, R. and Hort, J. (2019), “The effect of consumption context on consumer hedonics, emotional response and beer choice”. *Food Quality and Preference*, Vol. 74, pp. 59–71, doi: 10.1016/j.foodqual.2019.01.011.
- Oladokun, O., James, S., Cowley, T., Dehrmann, F., Smart, K., Jort, J. and Cook, D. (2017), “Perceived bitterness character of beer in relation to hop variety and the impact of hop aroma”, *Food Chemistry*, Vol. 230, pp. 215-224, doi: 10.1016/j.foodchem.2017.03.031.

- Oladokun, O., Tarrega, A., James, S., Smart, K., Hort, J. and Cook, D. (2016), “The impact of hop bitter acid and polyphenol profiles on the perceived bitterness of beer”, *Food Chemistry*, Vol. 205, pp. 212–220, doi: 10.1016/j.foodchem.2016.03.023.
- Paula, S.C.S.E., Zuim, L., Paula, M.C., Mota, M.F., Filho, T.L. and Della Lucia, S.M. (2021), “The influence of musical song and package labeling on the acceptance and purchase intention of craft and industrial beers: A case study”, *Food Quality and Preference*, Vol. 89, doi: 10.1016/j.foodqual.2020.104139.
- Poelmans, E. and Rousseau, S. (2017), “Beer and organic labels: Do belgian consumers care?”, *Sustainability*, Vol. 9 No. 9, doi: 10.3390/su9091509.
- SAS Institute Inc. (2022). SAS/STAT® User’s Guide. Cary, NC: SAS Institute Inc.
- Sebrae (2014), “Quem consome cerveja artesanal em Juiz de Fora”, Minas Gerais, available at: www.mg.agenciasebrae.com.br/sites/asn/uf/MG/Quem-consome-cerveja-artesanal-em-Juiz-de-Fora (accessed 9 March 2017).
- Silva, A.P., Jager, G., Voss, H.-P., Zyl, H.V., Hogg, T., Pintado, M. and Graaf, C. de. (2017), “What’s in a name? The effect of congruent and incongruent product names on liking and emotions when consuming beer or non-alcoholic beer in a bar”, *Food Quality and Preference*, Vol. 55, pp. 58-66, doi: 10.1016/j.foodqual.2016.08.008.
- Sparke, K. and Menrad, K. (2011), “Food consumption style determines food product innovations' acceptance”, *Journal of Consumer Marketing*, Vol. 28 No. 2, pp. 125–138, doi: 10.1108/07363761111115962.
- Thong, N.T., Thanh, B.Q., Solgaard, H.S. and Yang, Y. (2018), “The role of packaging format, alcohol level and brand in consumer’s choice of beer: A best-worst scaling multi-profile approach”, *Food Quality and Preference*, Vol. 65, pp. 92–100, doi: 10.1016/j.foodqual.2017.11.005.

- Tong, M. (2022), “Customers’ craft beer repurchase intention: the mediating role of consumer satisfaction”, *International Journal of Food Properties*, Vol. 25 No. 1, pp. 845-856, doi: 10.1080/10942912.2022.2066122.
- Zanetta, L.D., Umebara, M.T.C., Costa, J.P., Takeda, D.K. and Da Cunha, D.T. (2021), “Hedonic, emotional and willingness-to-pay response to beers of a different type in Brazil”, *British Food Journal*, Vol. 123 No. 1, pp. 87–107, doi: 10.1108/BFJ-02-2020-0137.
- Zapata, P.J., Martínez-Esplá, A., Gironés-Vilaplana, A., Santos-Lax, D., Noguera-Artiaga, L. and Carbonell-Barrachina, A.A. (2019), “Phenolic, volatile, and sensory profiles of beer enriched by macerating quince fruits”, *LWT*, Vol. 103, pp. 139-146, doi: <https://www.sciencedirect.com/science/article/abs/pii/S0023643819300039>.
- Wittink, D.R., Vriens, M. and Burhenne, V. (1994), “Commercial use of conjoint analysis in Europe: results and critical reflections”, *International Journal of Research in Marketing*, Vol. 11 No. 1, pp. 41-52, doi: 10.1016/0167-8116(94)90033-7.