

NHH



# The Effects of Basic Taste Skills on Brand Attitude

*The ability to distinguish between high and low quality beverage products*

**Anniken England**

**Supervisor: Magne Suppheller**

Master Thesis in Marketing and Brand Management

NORWEGIAN SCHOOL OF ECONOMICS

This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institute nor the examiners are responsible – through the approval of his thesis – for the theories and methods used, or results and conclusion drawn in this work



# Abstract

The purpose of this study is to examine the relationship between consumers basic taste skill and their ability to distinguish between high and low quality products and the moderating impact of branding.

Grocery stores are competing to sell food at the lowest price, or well-known brands that consumers prefer. Because consumers are supporting *the price war*, this results in lower food quality.

One persons approached to a products from a well-known brand name versus a non-known brand name, are found to be totally different. A well-known brand will raise interest for a consumer because of the message it represents and what the consumer can associate him- or her self with from using that exact brand. Even if the brand is of a high quality product or low, given a right value for the consumer, the product is chosen. While there is more likely that a non-known brand will be chosen based on other criteria's, such as price and design. Human ability to distinguish between high and low quality is therefore harder to address. Our sense of taste is therefore interesting to discuss because we might have a strong ability to taste, but are coloured by the brand.

We conducted a classical experiment on a convenience sample (N = 129) by utilizing six questionnaires to collect our data. Our research reveals that associative- and instrumental benefit differentiation does not differ in their positive effect on brand attitude, and that the associative strategy generates more benefit associations than the instrumental strategy. The results thus contradict the fundamental view of unique selling propositions and imply that brands could successfully achieve positive brand attitude with both differentiation strategies. Further, an associative benefit differentiation strategy should lead to a richer, more positive, and more sustainable network of associations. We failed to detect that the number of benefit associations positively mediates the effect of differentiation strategy on brand attitude. This could imply that one exposure is not sufficient in order to reveal such a relationship.

Keywords: basic skill, taste skill, brand knowledge, brand equality, self-concept.



# Preface

This master thesis is written in the final year of our Masters Degree in Economics and Business Administration at The Norwegian School of Economics (NHH). I specialize in the field of Marketing and Brand Management, and the topic of this thesis is consumers taste ability to distinguish between high and low quality beverage products and the moderating impact of branding. The thesis was written during the fall of 2019.

My thesis is based on cooperation with Druefin AS and Professor Magne Supphellen's research at Norwegian School of Economics. Druefin AS is my company where I work as a sommelier and consultant within food and wine. To better understand consumer's ability to distinguish quality, Professor Magne Supphellen allowed me to take part of a bigger research he has started.

I would like to thank my supervisor, Professor Magne Supphellen, researcher at NHH Nhat Quang Le, Mads Erling Pedersen at NIBIO, Roar Teige at NorStat and my partner Ove Svendsen, for valuable input, cooperation and feedback throughout the process. Magne Supphellen was of great help in choosing the research topic, and was a source of inspiration in writing this thesis.

My interest for the topic, research and hard work, along with the input from Magne Supphellen has contributed to make this an even more interesting and exciting thesis. I hope readers will feel the same way.

Finally, I would like to emphasize that the views and opinions expressed in this thesis am I full responsible for along with any errors made throughout the process of writing this thesis.

Bergen, May 2019

*Anniken England*

---

Anniken England



# Table of Contents

<b>Abstract</b>	<b>3</b>
<b>Preface</b>	<b>5</b>
<b>1. Introduction</b>	<b>9</b>
1.1 <i>Research Question</i>	10
1.2 <i>Thesis Outline</i>	11
<b>2. Theory</b>	<b>13</b>
2.1 <i>Brand knowledge</i>	13
2.1.1 Brand Awareness	14
2.1.2 Brand Image	14
2.2 <i>Brand Equity</i>	16
2.2.1 Increased Sales	17
2.2.2. Higher Profits	17
2.2.3 More Influence	17
2.3 <i>Build Brand Equity</i>	18
2.3.1 The Customer-Based Brand Equity Model	18
2.4 <i>Self-concept</i>	20
2.4.1 Purchase motivation	20
2.5 <i>Basic taste skills</i>	21
2.5.1 Taste	21
2.5.2 Conscious Taste Perception Guides Ingestion	22
2.5.2 Taste buds	23
2.5.3 Primary Flavours	24
2.5.4 Different tasters	24
<b>3. Framework and Hypotheses</b>	<b>27</b>
3.1 <i>Model</i>	27
3.2 <i>Hypotheses</i>	27
3.2.2 Brand and taste skills	28
<b>4. Research Design and Methodology</b>	<b>31</b>
4.1 <i>Research Design</i>	31
4.1.1 Research Strategy	31
4.2 <i>Data Collection and Procedure</i>	32
4.2.1 Choice of Product Categories and Brands	33
4.2.2 Stimuli	34
4.2.3 Preparing the data for Analysis	35
4.3 <i>Questionnaire Design</i>	35
4.3.1 Pre-test	36
4.4 <i>Sample Characteristics</i>	37
4.5 <i>Measures</i>	37
4.5.1 Moderator: taste ability	37
4.5.2 Basic Taste Skills	38
4.5.3 Participants` Background: Food and food preparing	38
4.6 <i>Descriptive Statistics and Correlations</i>	38
<b>5. Result: Test of Hypotheses</b>	<b>40</b>
5.1 <i>Test of Hypothesis 1</i>	41

5.2 <i>Test of Hypothesis 2</i>	41
<b>6. Discussion</b>	<b>42</b>
6.1 <i>Main Findings</i>	43
6.2 <i>Theoretical Implications</i>	43
6.3 <i>Practical Implications</i>	45
6.4 <i>Limitations</i>	46
6.4.1 <i>Internal Validity</i>	46
6.4.2 <i>External Validity</i>	47
6.4.3 <i>Construct Validity</i>	48
6.4.4 <i>Statistical Conclusion Validity</i>	48
6.4.5 <i>General Limitations</i>	49
6.5 <i>Further research</i>	49
<b>7. References</b>	<b>52</b>
<b>8. Appendix</b>	<b>57</b>
8.1 <i>Appendix 1 – CBBE model</i>	57
8.2 <i>Appendix 2 – Taste buds</i>	57
8.3 <i>Appendix 8 – Primary flavors</i>	58
8.4 <i>Appendix 4 – The attributes of a taste percept</i>	58
8.5 <i>Appendix 5 - Super taster versus non-taster</i>	59
8.6 <i>Appendix 6 - Sensory evaluation of food</i>	60
8.7 <i>Appendix 7 – Part 1: Taste test</i>	61
8.8 <i>Appendix 8 – Part 2: Questions: About food and cooking</i>	63
8.9 <i>Appendix 9 – Part 3: Pre-test and taste test</i>	64
8.10 <i>Appendix 10 – Instructions from NIBIO</i>	65



# 1. Introduction

What affects our choices in buying groceries on a daily basis? Do we distinguish between high and low quality beverage products? Have you ever tried same product and tasted if there is a difference? And does brand effect consumers basic taste skills?

To answer these questions we have to look closer into sensory skills alongside with different brands. We know little about how sensory skills actually affect consumer behaviour.

Literature can tell us about psychological factors such as perception and attitudes, but little on the case of sensory skills. Our sensory tools can be developed to improve, increasing our ability to differentiate between acidity, sweetness, salt, bitterness and umami.

In the last few years' consumers' food choice and quality perception have received even more attention due to intense debate on the subject. Issues like ethical consideration in relation to food production and quality, food scandals etc., has made us more aware of food production and quality. An increased interest in health and quality stands in contrast to a perceived unwillingness to pay the higher price this implies, and scepticism regarding industrial food production stands in contrast to busy lifestyles and demands for convenience. While the topics of food quality perception and choice have certainly become more complex, research has also provided new insight into them.

So, individuals and/or business managers face more choices with less time to make them. To simplify decision making, reduce risk, and set expectations in a strong brand's ability, is invaluable. Therefore, creating strong brands that deliver on that promise, and maintaining and enhancing the strengths of those brands over time, is a management imperative. Firms and other organizations have therefore come to the realization that one of their most valuable assets is the brand name associated with their products and services.

Keller (1993) points at the particular emphasis on understanding psychological principals at the individual or organizational level in order to make better decisions about the brands.

Branding has been around for centuries as a means to distinguish the goods of one producer from those of another (Keller, 1993). The word *brand* is derived from the Old Norse word *brandr*, which means, "to burn" as brands were and still are the means by which owners of

livestock mark their animals to identify them (Keller, 1993). According to the American Marketing Association (AMA), a brand is a “name, term, sign, symbol, or design, or a combination of, intended to identify the goods and services of one seller or group of sellers and to differentiate the from those of competitions” (Keller, 1993). In other words, when a marketer creates a new name, logo, or symbol for a product, a new brand is created. In fact, many refer a brand as more than that – as something that has actually created a certain amount of awareness, prominence, and reputation, and so on in the marketplace.

According to Keller (1993) many companies are investigating how they can make their marketing more (cost) efficient. One way is to adding higher competition, less demand and increasing costs to this situation. To succeed they need to appeal to consumers and distinguish themselves from competitors. When a company forms a positive attitude about the brand in consumers` mind, they will have an effect on purchase behaviour (Azjen, 2008; Hoyer & MacInnis, 2010).

Fishbein & Azjen (1975, p.6) describe an attitude as “*a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object*”. We can categorize attitude in different factors, which ultimately decides how consumers evaluate something, in this case: Brand. Attitudes can both be positive or negative, with some easy to remember, while others not as easy (Hoyer & MacInnis, 2010, p.122). Keller (1993) tells us that brands can leverage the effects of their brand positioning to create a competitive advantage in the minds of consumers.

More precisely, in this paper we will ask these two questions.

*Through an experiment, with the help of 150 participants, we will find out if there is a connection between our ability to distinguish between products and choice of brand.*

## 1.1 Research Question

Research on consumer behaviour has limited its attention to the stages culminating in a transaction (e.g. Gardial et al. 1994; Troye & Supphellen, 2004). Therefore, our research is scattered in a specific direction where we aim to figure out more about consumer`s way of

choosing products. Moreover, the correlation between taste and brand influence has not yet been researched much upon.

To extend the existing literature, I would like to further explore the knowledge about taste regarding food and beverage effect on brand attitude. More specifically, I would like to investigate the relative influence on beverages on brand attitude and how this effect may vary depending on different contexts. The following research question is proposed to guide the thesis is therefore:

*“To which extent does basic taste skills affect the ability to distinguish between high and low products, and how brand effects are affected by consumers taste skills.”*

## 1.2 Thesis Outline

This Master Thesis is followed by a deductive approach in order to answer the research questions presented above. In advance, I first studied and analysed existing theories, before the creation of hypotheses and a suitable research strategy to test them (Saunders, Lewis, & Thornhill, 2009).

Existing literature on basic taste skill is given an overview on in chapter 2. I start by explaining the basic concepts that are central to the thesis such as basic taste skills, impact of taste skills, brand equality and self-concept.

In chapter 3, the frameworks and hypotheses are presented. This chapter also includes an illustration of the hypothesized effects as well as an analysis of the reviewed literature based on which the hypotheses were formed.

Chapter 4 will explain how to test the hypotheses and a suitable research design. First, there is an explanation of the research design, followed by a detailed overview of the methodology used to test the hypotheses. This chapter will also include an overview of measures, descriptive statistics and correlation between variables.

In chapter 5, results are given with an overview of the hypotheses tests. Followed by the final chapter, where the main findings are presented, together with some additional ones – which

were discovered in the process – and also contributed to answering the research question. Other practical and theoretical implications are suggested. I also discuss the limitations of the research, as well as making proposals for further research in this topic.

## 2. Theory

In this section I will present my background theory. I have chosen a theory that addresses what effect brands have on people and why in most cases they choose a branded product instead of a non-branded product. Additionally, I will present the theory of our taste senses. Along with the research, we are interested to see if there is a relationship between brands, taste and what product we buy.

Our brain have made connections between certain products, how we fell about them, and what role they play in our lives (Erskine, 2017). With repetition we have learned that Sunniva juice represents high quality apple juice, and First Price represents low quality and cheap juice – not the other way around. When we purchase a product, all we need is a visual reminder or an impression of what values a brand represent for us to remember whether we like a product or not. These kinds of shortcuts make it easier for us to make quick decisions on a daily basis.

To fully understand I will start by defining what brand knowledge is and what role it plays for a consumer. Then I will present brand equity, which is interesting in way of learning more about the marketing effects to the brand. Lastly I will present how self-concept affects each individual and in the end explain how our sense of taste works.

### 2.1 Brand knowledge

A brand can be described as *“a name, term, sign, symbol, or design, or a combination of them which is intended to identify the goods and services of one seller or group of sellers and to differentiate them from those competitors”* (Kotler 1991, p.442). These components are referred to their identities or in totality *“the brand”*. The true understanding of the content and structure of brand knowledge is important because those factors influence what comes to mind when a consumer thinks about a brand.

Anderson (1983), Wayer and Scrull (1989) have conceptualizations a memory structure involving some type of associative model formula. Their model views a semantic memory or knowledge as consisting of a setoff nodes and links; *“associative network memory model”* (Keller, 1993). In our brain nodes have stored information connected by links that vary in

strength. These links have both positive and negative associations. A “spreading activation” process from a node to node determines the extent of retrieval in memory (Collins and Loftus 1975; Raaijmakers and Shiffrin 1981; Ratcliff and McKoon 1988).

Brand knowledge is therefore defined in terms of two concepts; (1) *brand awareness* and (2) *brand image* (Keller, 1993). Brand awareness related to brand recall and recognition performance by consumers, while brand image refers to the set of associations linked to the brand that consumers hold in memory.

### **2.1.1 Brand Awareness**

According to Rossiter and Percy (1987) brand awareness is related to the strength of the brand node or trace in memory, as reflected by consumer’s ability to identify the brand under different conditions. A brand should have the ability to fully identify its function or when a brand comes to mind, it should do so with ease. Brand awareness consists of brand recognition and brand recall performance (Keller, 1993). When given the brand, a consumer’s ability to confirm prior exposure is understood to be brand recognition.

There are three important reasons for a consumer’s awareness to a brand when making a decision. First, it is important that consumers think of the brand when they think about the product category. Second, brand awareness can affect decisions about brands that consideration set, even if there are essentially no other brand associations. Finally, brand awareness affects consumer decisions making by influencing the formation and strength of brand associations in the brand image (Keller, 1993).

### **2.1.2 Brand Image**

Keller (1993) defined brand image as the “*perceptions about a brand as reflected by the brand associations held in consumer memory*”. These accumulated brand associations carry the meaning of the brand for a consumer (Keller, 1993). In other words, brand associations represent the pieces of information that comes to mind when a consumer thinks about a brand.

People keep images of themselves and other; therefore they also have images of brands (Sirgy, 1985). This indicates the importance for brands to create a positive brand image in

consumers' minds, as it aids in the brands positioning and provides it with the opportunity to differentiate itself from competitors. Keller (1993) divides brand associations into two categories: brand attributes and brand benefits.

### **2.1.2.1 Brand attributes**

Brand attributes is defined as the opinion of consumers towards a product, determined through market research (Keller, 1993). It will display what people think about a product or service, whether the product answers a consumer's need, and also how much the consumer wants the product. Keller (1993) divides attributes further into two: *product-related* and *non-product-related*. Product-related attributes are those necessary to fulfil the product's/service's functional expectations, such as physical or performance requirements. While non-product-related attributes, are those associated with the purchase or consumption of a good/service such as price, packaging, and user imagery.

Brand attributes can belong to different categories, making it hard to find the right one. One may be a quality attribute, which seems to be purely product related. Dodds et al (1991) defined quality as "the perceived ability of a product providing satisfaction relative to available alternatives". Perceived quality is not always objective and may be based on subjective perceptions of the intrinsic attributes, such as flavour, smell or colour) (Garvin, 1984), or extrinsic attributes as the manufacturer's brand image, price and country of origin (Teas & Agarwal, 2000). It also has features in non-product related attributes. Some researchers even have suggested that perceived quality is similar to an attitude (Parasuraman, Zeithamal, & Berry, 1988).

### **2.1.2.2 Brand benefits**

Keller (1993) describes brand benefits as the personal value, i.e. what the consumer imagines the product/service could do for them and therefore attaches the product/service. Further, there are three types of benefits based on consumers' need: *functional*, *experiential* and *symbolic* (Park, Jaworski, & McInnis, 1986; Keller, 1993).

Functional benefits help consumers solve problems, like a vacuum cleaner removes dust. Experimental benefits satisfy needs connected to sensory pleasure (e.g. the smell of green or

an red apple), cognitive motivation (e.g. solving a puzzle), and/or variety seeking (e.g. changing the brand or flavour of an apple juice with each purchase). Symbolic benefits help consumers to influence how they perceive themselves as well as how others perceive them. Additionally, consumers buy products because of their personal or social meaning, rather than purely on their functional benefits (Levy, 1959; Grubb & Sten, 1971).

In regards to this thesis, I will focus on non-product related attributes, symbolic benefits, and especially attributes of quality and taste because their perception may be influenced by brand image (Moirul & Ham, 2012). Further I will raise focus on marketing effects iniquity attributable to the brand, *brand equity*. In other words, how companies can earn money from their well-known products.

## 2.2 Brand Equity

Keller (1993) has described brand equity in a general sense to be the marketing effects iniquity attributable to the brand. The basic understanding of brand equity is that companies can earn more money from their products if consumers believe them to be superior to those by lesser-known brands, and they can do this without having to reply purely on price or promotions. How a brand make a consumer choose their products instead of another. According to Keller (1993) there have been two motivations to study brand equity. The first being financial and secondly, strategy-based.

The financial perspective raises interest to estimate the value of a brand more precisely for accounting purposes or for merger, acquisition, or divestiture purpose (Keller, 1993). It could be in terms of assets valuation for the balance sheet. While strategy-based motivation, is to improve marketing products. Firms seek to increase the efficiency of their marketing expenses, because there are higher costs, greater competition, and flattening demand in many markets. Keller (1993) looks at the consequences in which the marketers need to be more thorough in understanding consumer behaviour as a basis for making better strategic decisions about target market definition and product positioning, as well as bettering their tactical awareness regarding specific marketing mixed actions.



There are three key areas brand equity influence. Additionally it affects companies who want to sell more or attract more investor. These are; (1) increased sales, (2) higher profits and (3) more influence.

### **2.2.1 Increased Sales**

The purpose of a brand is to give the consumer something they can trust. It can be a quality, a promise of what to expect, a statement of values and ideals that a consumer can align with their own. Values are important to most consumers, because studies show that people want to associate one-self with their beliefs. A study by Nielsen, found 69% of consumers prefer to buy new products from a brand they are already familiar with, rather than buy from an unknown (Frighetto & Wolf, 2013). Building brand equity is therefore central not only to achieving initial cut through and repeat custom, but also to future business development and the ability to stay ahead of new market entrants.

### **2.2.2. Higher Profits**

Consumers are willing to pay more for brands they like. An example is Tesco own-label Italian chopped tomatoes cost 35p for 400g, while Napolina's same-sized chopped tomatoes tin cost 95p – that's 171% more! Research from Askatest shows how much more consumers are willing to tolerate in a price raise when it comes to their favorite brands too, with 28% reporting they would pay up to 10% more in order to continue buying the brands they love. Research shows brand equity plays an important role in price structure, with companies able to charge a premium for products even when physical superiority over competitors can't be demonstrated (Baltas & Saridakis, 2010).

### **2.2.3 More Influence**

Additionally, studies show that companies with high brand equity find it easier to recruit talent. That's because job seekers use reputation perception as a signal about job attributes, and reputation affects the pride that individuals expect from organizational membership. Plus they know that working for a well known, well-respected brand will help them when searching for their next role. Individuals will even accept lower wages to join firms with positive reputations.

## 2.3 Build Brand Equity

Brand equity results from a combination of two factors; consumer awareness and consumer perception (Keller, 1993). In practice, consumers are not only aware of the brand and its features, but also have associated positive views on what the brand stands for. Brand equity is created through investments in marketing and communications and is amplified by economic growth, word-of-mouth and strategic partnerships. To fully understand the value, *Keller's Brand Equality Model* provides a structure to help work out the current position and devise a strategy for moving forward. The model is known as the Customer-Based Brand Equity (CBBE) Model.

### 2.3.1 The Customer-Based Brand Equity Model

The purpose of the model is to show businesses how to lay the foundation that creates a positive attitude towards a brand (appendix 1). The pyramid shape is to indicate how customers think and feel about the product. This is critical to its success. When building the right type of experiences around the brand, customers have specific, positive beliefs, feelings and opinions, about it. The ability to do this is underlined by a thorough understanding of the target consumers' wants and needs. In answering wants and needs, and speaking to the audience in a way that resonates with them, is the right approach to help build brand equity. In turn, this means customers will buy more of it, they'll recommend it to other people, they'll be more loyal, and they'll be less likely to be lost to competitors.

Along with the model, there are four steps with different focus and questions to ask. These are; (1) Salience, (2) Imagery and performance, (3) Judgments and feelings, and (4) Resonance. I have shortly described the most important point within each step beneath.

#### 2.3.1.1 Step 1: Salience (Who are you?)

The purpose of this step is to make one think about the depth and width of customer awareness. These questions are highly relevant: What words would consumers associate with your brand name? How are customers classifying your brand? Do they perceive you as you would want them to?

### **2.3.1.2 Step 2: Performance and Imagery (What are you?)**

Step 2 shows the importance to identify and communicate how the brand meets customers' needs. Therefore step two is broken down into two areas; (1) "*performance*" and (2) "*imagery*". To cover the practical needs, "*performance*", is including products functionality and reliability, style and design, price and customer service. Meanwhile, "*imagery*" refers to how well the brand meets customers' needs on a social and psychological level does the brand values chime with those of the customers?

### **2.3.1.3 Step 3: Judgment and Feelings (What about you?)**

Step 3 covers consumers' response to the brand. It is divided into two categories; (1) "*judgments*" and (2) "*feelings*". Within this step one think about the ways consumers are influenced of the brand. *Judgments* look at brand quality, brand credibility, relevancy to their unique needs and superiority in comparison to competitors. Additionally, one has to take into consideration customer responses to the brand according to how it makes them feel. Equally towards the product and about themselves. According to the model, there are six positive brand feelings: warmth, fun, excitement, security, social approval, and self-respect (Keller, 1993).

### **2.3.1.4 Step 4: Resonance (What about you and me?)**

On the top of the pyramid is brand "*resonance*". It is located on top to pinnacle of brand equity. The mean is to make customers feel a deep, psychological bond with the brand and, consequently, will remain loyal to it.

"*Resonance*" is further broken down into four categories by Keller (1993). The goal of step 4 is to find ways to strengthen each resonance category, recognizing and rewarding those customers who are loyal to your brand. These are:

- Behavioral loyalty: Customers purchase from you repeatedly
- Attitudinal attachment: Customers feel love for your brand
- Sense of community: Camaraderie exists between customers, as well as brand representatives
- Active engagement: Customers engage with your brand even when they are not purchasing it or consuming it i.e. on social media or at live events

Brand equality can be measured both tangible and intangible value. The tangible is evident in things like the profit margin and market share, while the intangible manifests as awareness or goodwill. To measure it, it is necessary to use a mixture of quantitative (data-based) and qualitative (anecdotal) research methods.

Additional to the model, which is showing businesses how to lay the foundation that create a positive attitude towards a brand, is to study of the totality of the individual thoughts and feelings towards themselves. It is “self-concept” and I will explain it in the next section.

## 2.4 Self-concept

Rosenberg (1979, p.7) has defined self-concept as the “totality of the individual’s thoughts and feelings having reference to himself and an object”. The thoughts and feelings people have about ourselves, others, as well as who and what we are, the way we look, and what we can and cannot do.

Originally, self-concept was studied as a one-dimensional construct considering only the actual self (e.g. Birdwell, 1968; Green, Maheshwari, & Rao, 1969; Grubb & Steen, 1971). Along with the research progressed, the one-dimensional view evolved into a multidimensional one to include other facets of the self such as the ideal self, the social and the ideal social self (e.g. Sirgy, 1982; Malhotra, 1988). The ideal self refers to how a person desires or aspires to see him or herself. While the social self relates to how a person perceives others to see him- or her self. The ideal social self relates to the way a person would like others to perceive him- or her self.

Self-concept may relate more to one or the other depending on the goal he or she has for buying certain products or services (Malhorta, 1988; Hong & Zinkhan, 1995).

### 2.4.1 Purchase motivation

Consumers buy products not only on their functionality, but also of their symbolic meaning, such as the brand (cf. section 2.1 Brand Image). This is highly related to maintaining or enhancing their self-concept. Graeff (1996) describes consumer’s use of products to express

their self-image as: who they are, where they are, what they are, and how they would like to be viewed.

Also, consumers are motivated by self-consistency in which they try to maintain and protect their actual self (Hong & Zinkhan, 1995). External influences may threaten the self-concept and destabilize it, causing anxiety and discomfort for the individual because the beliefs a person has about him or her self (i.e. self-concept) is challenged (Rosenberg, 1979; Hong & Zinkhan, 1995). As Sirgy (1982) describes: people buy, project or use products and brands consistent with their actual self. In other words, people are motivated by self-esteem in which they try to enhance their self-concept towards the ideal self to be perceived more positively by others. (Hong & Zinkhan, 1995). People have different goals (i.e. consistency or enhancement); the role and selection of self-concept may vary across different people, products and/or situations (Malhotra, 1988; Hong & Zinkhan, 1995).

## 2.5 Basic taste skills

Through evolution, human taste has helped us decide what to eat and influences how efficiently we digest these foods. Therefore human taste abilities have been sharpened, in large part, by the ecological niches our evolutionary ancestors occupied, and by the nutrients they sought (Breslin, 2013). Early hominoids reduced the risk of wasting energy and metabolic harm from eating foods of low nutrient and energy content, but also the harmful and potentially lethal ingestion of toxins. Exploring the ancestral context for taste is useful to understand how modern humans use taste to live and feed today. Those who lived in an environment of very low food security foraged using taste to identify nutritious foods to eat. Most people today live in an environment of abundant, palatable foods and are guided by taste to over-consume calorically dense foods, often resulting in diabetes and obesity.

### 2.5.1 Taste

Breslin (2013) describes the sense of *taste* as a sensory modality involving the oral perception of food-derived chemicals that stimulate receptor cells within taste buds. Taste precepts are

elicited by molecules that stimulate the taste buds in epithelia of the oral cavity and pharynx (back of the throat), see Appendix 2. Combined with aroma and tactile sensations forming flavours taste allows us to identify and recognize food items as familiar or novel.

There are several important functions taste serves for humans. Breslin (2013) points out two:

(1) Taste sensory inputs influences our thinking, deciding, and behaviour towards sampled foods, both *consciously* and *unconsciously*,

(2) Taste inputs influence our physiology and the *metabolic processing* and *signalling* of nutrients and toxins once ingested. These two functions help create our food preference and feeding habits that sustain and maintain us throughout life and enable our species to reproduce.

### **2.5.2 Conscious Taste Perception Guides Ingestion**

Our everyday experience with food and taste compounds, created our conscious understanding of taste. Tastes are multi-attribute sensations. Most people appreciate taste precepts as having the traits of quality (sweet, salt, sour, bitter, savoury, and possible others) along with intensity. Yet we are also aware that taste can have location and timing cues, such as when bitter tastes linger too long in the back of our throat (Breslin, 2013). Even though we have multiple taste qualities, our taste system is able to analyse the individual components of a complex mixture. Additionally, taste sensations are integrated with food temperatures, pain sensations from the mouth, tactile texture, and with volatile compounds that are detected by the olfactory epithelium within the nasal cavity.

The multiple sensory attributes that comprise taste, explains Breslin (2013) to be quality, intensity, oral location and temporal dynamics. These sensory attributes are also integrated with another dimension of taste, its affect or palatability. For instance, moderately strong sweet sensations are innately attractive and accepted by new-borns and adults. While moderate bitter taste are innately aversive and rejected by new-borns. Human's acceptance and rejection of taste and flavours are mainly governed by brainstem reflexes that drive rhythmic tongue movements accompanied by swallowing for sweet taste and grapes and shudders for intense bitter tastes (Breslin, 2013). However, learning can reverse these innate

responses in humans. Within the chemosensory attributes, the palatability of taste, flavour, or food is the most labile.

### 2.5.2 Taste buds

The human tongue contains three types of taste *papillae*; these are illustrated in Appendix 1. Vallate and Foliate papillae reside on the middle and sides of the posterior one-thirds of the tongue, respectively. They contain hundreds of taste buds collectively. Circum-vallate papillae are comprised as an arc of small ring-like structures (tiny towers surrounded by moles) in posterior tongue. Foliate papillae are slits (leaves) in the side of posterior tongue and can appear like gills in the tongue. Fungiform papilla looks like small bumps or mushrooms and are scattered in the anterior two-thirds of the tongue, each harbouring 0–15 taste buds. Taste buds are also located in the soft palate (non-bony palate in front of the uvula) and pharynx (back of the throat) but are in the flat epithelium, rather than in papillae in these locations. The first inset depicts the microscopic taste buds residing within the epithelium (outer layer) of a fungiform papilla. The small structures surrounding the fungi- form papilla are called filiform papillae, they do not contain taste buds, and serve to make the surface of the tongue rough and help detect food textures. The second inset depicts a single rosette-shaped taste bud from within this fungiform papilla that contains dozens of taste receptor cells and contacts taste stimuli within the oral cavity via a small epithelial hole called a taste pore. (Breslin, 2013)

When chemicals in the food we eat stimulate our taste buds, we refer them to *chemoreceptors*. The chemical substances in the food and drinks dissolve in the saliva and enter the taste pores; small openings that lead to the interior of the taste buds. Our taste receptors contain receptor cells, the ends of which possess large microvilli, known as *taste hairs*. The taste hairs project into the taste pore. The plasma membrane of taste hairs contains clusters of protein molecules that serve as *receptors*. It is the receptors that bind food molecules to dissolve in water. Further more, it stimulates the receptor cells, which then stimulate the dendrites of the sensory nerves wrapped around the receptor cells. (Chiras, 2008)

### 2.5.3 Primary Flavours

The uniqueness of human beings is that we can distinguish between thousands of taste sensations. A human can taste sensations combined of five basic flavours: *sweet*, *sour*, *salty*, *bitter*, *acidity* and *umami* (Appendix 3).

Our experience of *sweetness* is usually caused by sugar and its derivatives such as fructose or lactose. Additionally there are also other types of substances that can activate the sensory cells that respond to sweetness. These are for example protein building blocks like amino acids, and also some alcohols in fruit juices or alcoholic drinks. Flavour of *sour* is mostly an acidic solution like lemon juice or organic acid. We experience sour by hydrogen ions (chemical symbol: H<sup>+</sup>) split off by an acid dissolved in a water solution. In everyday life table *salt* is what we taste as salty. The chemical basis of this salt crystal consists of sodium and chloride. While other sensations of saltiness can be mineral salts like the salts of potassium or magnesium. *Bitter*, on the other hand, comes in different shapes and forms. One might know it from a tea bag, which was too long in the cup for example. In total there are about 35 different proteins in the sensory cells that respond to bitter substances. The last taste is *savory*, better known as “*umami*”. The most common is the taste of a meat broth (usually caused by glutamic acid). In Chinese cuisine, glutamic acid such as MSG (Mono sodium glutamat) is used as flavour enhancers. The reason why its use is so common, is to make food taste more intense (Breslin, 2013).

### 2.5.4 Different tasters

The definition of a supertaster is if you have more than 30 taste buds in a space the size of a whole punch on your tongue. Another indication might also be if you are a picky eater.

When it comes to the physical sense of taste, there is scientific evidence that females are superior. Comparing women and men, women are more likely to be supertasters. Studies have shown that women were found to be better at determining the difference in tastes and even better at describing how things taste (Bartoshuk, Duffy, Reed & Whilliams, 1996).

Additionally, she can also confirm that they have experienced that women often outperform men in finding words to describe taste. There is research held to figure out why women have better taste buds than men. From an evolutionary standpoint, its suspected that, a womens



tasting abilities are more developed because the female sex plays a more important role in protecting offspring - both during and after pregnancy (Korneliussen, 2014).

There are 3 types of taster in the world; *supertaster*, *average taster* and *non-taster*.

A supertaster is defined if you have 30 or more taste buds. When eating or drinking, you have an intense impression if it is salty, sweet, sour, and the sensation of fat or bitter. A supertaster might be one who doesn't like bitter vegetables such as Brussels sprouts or kale. One tends also to prefer less bitter drinks, or less tannins in wine. It also means that one tends to eat bland food over super rich foods that taste to "oily". You might be a picky eater, but being a supertaster is actually pretty good: studies by researcher Linda Bartoshuk at Yale University have shown that supertaster are less likely to be obese than non-tasters.

Average tasters have between 15-30 taste buds. Other similarities are that you like vegetables and you probably enjoy earthy and savoury wine. In the US about 50 % of people were average tasters. An average taster can still taste the same bitter flavour that a supertaster tastes, but they don't cause you to wince. Usually these people are a try-anything taster. With a few skills, your ability to taste better can be improved.

While a non-taster have below 15 taste buds. An indication if you are in this group might be that a bowl of 5-star spicy Thai food doesn't make you whimper in pain or you are a fan of high-tannin wines. People in this group tend to lean towards rich, spicy and strongly flavoured foods. The ability to taste bitter is less or one might not taste it at all.

#### **2.5.4.1 Becoming a better taster**

Everyone starts out with around 10.000 taste buds that our body naturally replaces every second week. Along with your age this number goes down to about half. Therefore, it is important to maximize your ability to taste while you can. Be also aware that taste buds are reduced in number by smoking and drinking.

To become a better taster there are three steps one can take.

The majority of our sense of taste comes from our ability to detect aroma. Therefore it is necessary to use the nose more

(1). Pay more attention to texture and how it evolves in the mouth instead of only tasting the food or wine

(2). Last, but not least, being present with everything you taste (3). These points will help to develop a better sense of taste.

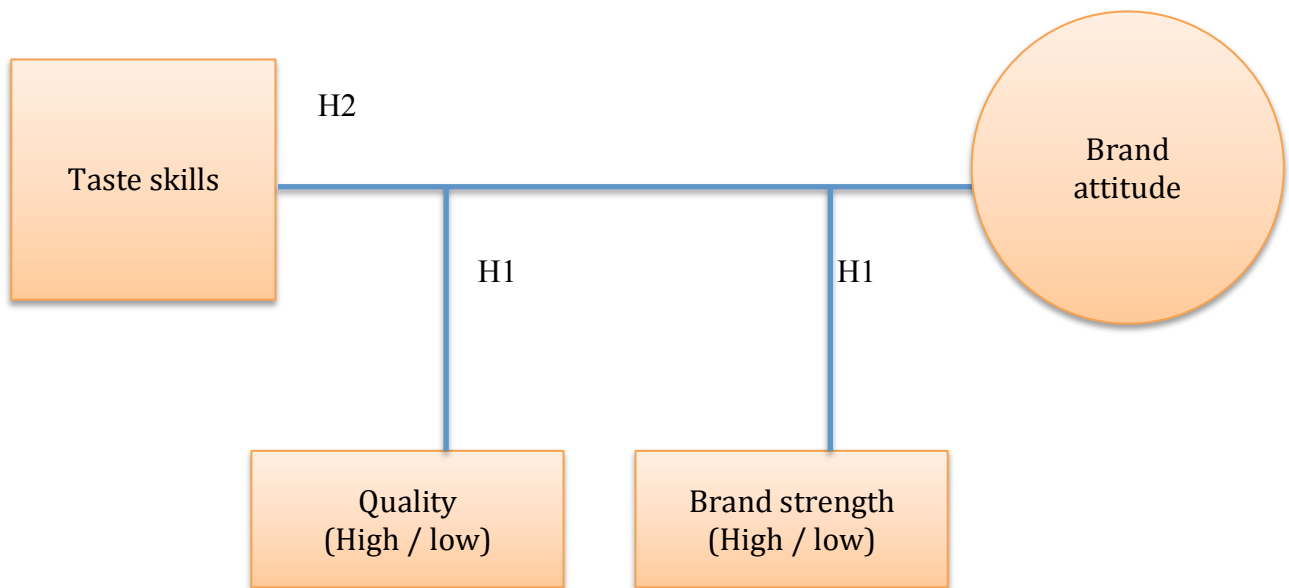
Further, I will in next section present the framework and hypotheses of this paper.

### 3. Framework and Hypotheses

The purpose of this chapter is to introduce the framework and hypotheses for our research. I will first introduce the model for this research before I outline the arguments for each hypotheses.

#### 3.1 Model

Figure 1 represents the conceptual framework that I would like to study. Based on the literature introduced in Chapter 2, I assume that taste ability has an effect on brand attitude. A brand will vary dependent on once ability to distinguish between taste and quality of the product. The frameworks of brand attitude and taste skills are proposed in the figure.



*Figure 1 Conceptual Model*

#### 3.2 Hypotheses

Followed by my research model presented above, there are 2 proposed hypotheses:

1. The first hypothesis studies the ability to distinguish between high and low beverage products due to ones basic skills.
2. The second hypotheses looks into brand effects affected by consumers taste skills.

### **3.2.1 Distinguish between high and low quality**

Humans have a conscious understanding of taste because of their daily consumption of food. Through evolution human taste has been important due to the reduction of risk of wasting energy and metabolic harm from eating foods of low nutrient and energy content, but also to avoid the harmful and potentially lethal ingestion of toxins (Breslin, 2013). Most people today live in an environment of abundant, palatable foods and are guided by taste to over-consume calorically dense foods, often resulting in diabetes and obesity. Our basic taste does not have the same importance as it used to. Therefore, it is important to study consumers basic taste skills and figure out if they can taste difference in quality or if they only buy products due to price, brand, or other reasons.

We know brand affects people more than they think. Our self-concept is clear that we have thoughts and feelings that reference to our self or the object. We buy products, not only on their functionality, but also of their symbolic meaning, such as the brand. This is highly related to maintaining or enhancing their self-concept. Products are used to express ones self-image as: who we are, where we are, what we are, and how we would like to be viewed.

I would like to develop a further understanding of how the basic taste affects the human ability to distinguish between high and low quality products, taken together with the influence of a consumers` brand attitude. In my analyses I will test for the individual basic taste and effect of a product. I expect the consumer`s basic skill will affect the ability to distinguish between high and low quality beverages products and also be more precise when basic skills are high.

***Hypotheses 1:*** There is a positive effect of consumers` taste skills on the ability to distinguish between low- and high quality beverage products.

### **3.2.2 Brand and taste skills**

We know little about how sensory skills actually affects consumer behaviour. Existing literature can tell us about psychological factors such as perception and attitudes, but little on sensory skill.

Studies have proved that brand imaging is efficient. Brand image is defined as the “*perceptions about a brand as reflected by the brand associations held in consumer memory*”. These brand associations - understood together, carry the meaning of the brand by a consumer. In other words, brand associations represent information that comes to mind when a consumer thinks about a brand. Additionally, when a consumer recognizes a brand and has some knowledge about it, they do not have to engage in a lot of additional thought or processing of information to make decisions regarding the product. People have images of themselves and others; therefore they also have images of brands (Sirgy, 1985). This indicates the importance of brands to create positive images in the consumers’ minds. It aids brands in their positioning and provides them with the opportunity to differentiate themselves from competitors.

A brand positioning therefore clarifies what a brand is all about, how it is unique and how it is similar to competitors. The aim of brand positioning is to explain why consumers should purchase and use a brand product. The main purpose for a brand is to achieve active and loyal customers, which in turn would allow brands to charge price-premiums and obtain more effective marketing programs (Keller, 2001). It is very likely that brand effects are affected by consumers’ taste skills.

A brand’s tactical and strategic positioning is made up by primary and secondary associations (Supphellen, n.d.). The primary associations are the first that come to mind, and these thoughts are also the first to be activated when people are provided with the brand as a cue. Often these associations are shared by brands within a product category. Though one association might link to another, these associations are called secondary brand associations.

The totality of the individual’s thoughts and feelings - with reference to himself and an object - is the definition of self-concept (Rosenberg, 1979, p.7). The thoughts and feelings people have about ourselves, others, as well as who and what we are, the way we look, and what we can or cannot do. Graeff (1996) describes consumer’s use of products to express their self-image as who they are, where they are, what they are, and how they would like to be viewed. People buy, project or use products and brands consistent with their actual self (Sirgy, 1982). In other words, people are motivated by self-esteem in which they try to enhance their self-concept towards the ideal self to be perceived more positively (Hong & Zinkhan, 1995).

Most people appreciate taste precepts as having the traits of quality (sweet, salt, sour, bitter, savory, and possible others) along with intensity. Yet we are also aware that taste can have location and timing cues, such as when bitter tastes linger too long in the back of our throat (Breslin, 2013). Even though there are multiple taste qualities in a cocktail, our taste system is able to analyse the individual components of a complex mixture. Additionally, taste sensations are integrated with temperatures, pain sensations from the mouth, tactile texture, and volatile compounds that are detected by the olfactory epithelium within the nasal cavity.

The multiple sensory attributes that comprise taste, explains Breslin (2013) to be quality, intensity, oral location and temporal dynamics, and are also integrated with another dimension of taste, its affect or palatability. However, learning can reverse these innate responses in humans. Within the chemosensory attributes, the palatability of taste, flavor, or food is the most labile. Most likely a supertaster should be able to differentiate between products of different brands, and therefore buy the one he/she thinks is the best. Though, one might ask - if it is always the case.

I would like to further understand how brand effects can affect consumers taste skills. In my analyses, I will test for the individual brand effect on taste skills. I expect when the quality is high, the effect of brand on choice will be weaker for people with strong taste ability. The second hypotheses question is therefore:

***Hypotheses 2:*** There is a positive effect of consumers' brand effects affected by their taste skills.

## **4. Research Design and Methodology**

In this chapter I will explain how I have planned and conducted the study to answer the research question proposed in chapter 1. First, I will describe the choice of the research design and second, describe the methodology used to conduct the experiment, including a description of the procedure, sample, and measures.

### **4.1 Research Design**

The purpose of *research design* is to summarize the way I planned to answer the research question. It includes the purpose of the research, the sources used to collect all the necessary data and the research design contains (Saunders et al., 2009).

In this study I aim to find out how consumers basic taste skills affect the ability to distinguish between high and low quality beverage products as well as the effect the brand has. I also hope to find a casual relationship between discriminate less between low- and high quality drinking products than high-tasters and if low-tasters are more influenced by strong brands than high-tasters.

Explanatory research is the most precise in allowing me to study whether any causal relationships were presented (Saunders et al., 2009).

I followed a deductive approach, which according to Saunders et al. (2009) is advised to study and analyse existing theories first as input for one's hypotheses and then followed by the development of a suitable research strategy to test the hypotheses. Contradictory, an inductive approach Saunders et al. suggest, is that one collects the data first, and then create a theory based on the results obtained.

#### **4.1.1 Research Strategy**

The research strategy presents how data will be collected. There are many types of research strategy according to Saunders et al. (2009), such as surveys, case studies, action research,

experiments, grounded theory, ethnography, and archival research. When choosing a method one has to consider each case when selecting the right strategy for a study, and each method by its up- as well as its downsides.

For this research I decided to implement a laboratory experiment. The objective for an experiment is to study causal relationships (Saunders et al., 2009). Majority of research done on taste skills - to prove or disprove abilities to distinguish between qualities, has been done through experiments. When using a similar strategy for this research, the aim was to find significant results and to contribute further to the literature. NorStat recruited people for the survey. They selected 150 people from all ages above 18, gender and background. This survey approach allowed us to collect large amounts of data for the research.

## 4.2 Data Collection and Procedure

I spent one day at Norwegian Institute of Bioeconomy Research (NIBIO) at Ås, where I was given instructions in each step of how to successfully do a consumer basic taste along with questionnaire and quality test. The guidelines for conducting this sensory analyse was in line with *Sensory evaluation of food – Lawless and Heymann (1999)* (Rødbotten, 2015) (Appendix 6) (Appendix 10).

Along with instructions from NIBIO and Professor Magne Supphellen, a survey was created to examine consumers basic taste skills and to figure out their ability to distinguish between high and low quality beverage products along with brand effect (cf. Appendix 7, 8, 9). We used a 2 (brand strength) x 2 (product quality) design. The combination of brand strength and product quality was manipulated between subjects. Taste skills were a measured variable (not manipulated).

This survey was based on one experiment conducted by Troye and Supphellen (2012), where they investigated *effects on consumers` sensory perceptions and evaluations of outcome and input product*. They believe that outcome dependency occurring at the intersection of products and consumer performance has important managerial and theoretical implications (Troye & Supphelleb, 2012). To further go into depth on Troye- and Supphellens (2012) research, a basic taste survey along with quality test was conducted. Together with my



supervisor, Professor Magne Supphellen, I made a juice-test to test quality with known and unknown brands.

To simplify the data collection process, the questions in survey structure survey only contained closed-ended questions. The data was collected cross-sectionally, which measured the data from our sample at a specific point in time. Our survey was spread over three days and consisted of 150 participants. 133 attended and participated in the research. Every participant received equally part 1 and 2 (Appendix 7 and 8), while part 3 (Appendix 9), the juice test, was divided into four different groups. In the other questions regarding food and food preparation, we had six questions with sub questions where one should answer with a number from 1 to 7 (1=totally disagree and 7=totally agree).

Part 3: The survey was divided into four groups. All participants were given two cups of juice, A and B. In cup A, the juice consisted of 60 % “Sunniva Sydtirol eplejuice” and 40 % water, while cup B consisted of 100% “Sunniva Sydtirol eplejuice”. Within these four groups, brands changed between known brands and non-existing brands. Brands differentiated from: Group 1) High quality brand – low quality brand, group 2) high unknown quality brand – low unknown quality brand, group 3) high quality brand – low unknown quality brand and group 4) high unknown brand – low quality brand.

#### **4.2.1 Choice of Product Categories and Brands**

There were several suitable products available for the experiment. We chose apple juice for several reasons. Anticipating that our sample would consist of a broad representative of the population (cf. section 4.3), it was important to choose a product that they were familiar with. Additionally, apple juice has a product quality people are used to. In a beer research done by Allison & Uhl (1964) they found that participants in their experiment did not distinguish between taste differences among various brands of beer, but labels and related associations were influential on their evaluations. The symbolic value of a product, the brand name and the story behind it, makes an apple juice more suitable as a product for the experiment.

Additionally, the experiment needed a product, which was suitable for all conditions in the research and useful. Due to media focus on Norwegian apple juice, there was also an interest to speculate in the brands to figure out the effect one brand might have when analysing the

product. Respondents could choose from two different apple brands, these brands varied from common Norwegian to uncommon international brands.

Along with the apple test, each participants was given a set of questions in part 2 where they answered what products they new. Some of these products were known and others unfamiliar. Respondents did not have the option of freely choose any other products than the ones in the provided list.

#### **4.2.2 Stimuli**

For the last task in the study we divided all participants into four different groups. Each group was given two glasses of juice; glass A and glass B. Participants were randomly assigned to one of four groups. Each group represented a different alternative for part 3 in the experiment. We used two well-known brands; Ringi and Sunniva. Majority of the population are familiar with Sunniva, which can be found in most grocery stores, while Ringi has become a well-known brand the past two years solely at Vinmonopolet. For unknown brands we made up two different ones; Ariana and Perri

These where the four different groups:

1. Group 1 - 4 was informed what A was and B was.
2. Group 5 - 7 was informed that A was Ringi and B was Sunniva.
3. Group 8 - 11 was informed that A was Eldorado and B was Perri
4. Group 12 - 15 was informed that A was Ariana and B was Perri.

The purpose of part 3 in the research was to figure out which could state the quality of the juice. Therefore we divided the brand names into these categories:

1. High quality well known juices (HQW) – Sunniva og Ringi
2. Low quality well known juice (LQW) – Eldorado
3. High quality un-known juice (HQU) – Ariana
4. Loq quality un-kown juice (LQU) – Perri

### 4.2.3 Preparing the data for Analysis

After all participants had done the survey, I collected the papers and organized them into an excel sheet. Further, the data was exported into SPSSR version 3.5.3 by R Core Team (2019) to start analysing the results. First we had to review the entire dataset and make sure every respondent had answered everything. Out of the 150 signed participants, 133 participants completed the experiment over 3 days. I excluded one person because of missing age, and three who did not complete the entire questionnaire.

The remaining samples of 129 participants were used for our analysis and hypothesis testing. Next we reviewed the dataset to check for any careless responses – which we were not able to detect.

## 4.3 Questionnaire Design

Most of our questionnaire consisted of closed-ended questions. In those cases where we needed a given number as an answer, we utilized an open-ended question. When asked which associations they had towards a distinct product, they responded by circling a given number from 1 to 6. 1 being “not knowing”, while 6 was “knowing quiet well”.

We used likert-style questions on the closed-ended questions. Respondents were asked to rate how strongly they agreed or disagreed with different statements on seven-point rating scales. The seven-point rating scale included 1) Strongly disagree, 2) Disagree, 3) Slightly disagree, 4) Neutral, 5) Slightly agree, 6) Agree, and 7) Strongly agree. The alternative 4) Neutral served as an option in case some respondents had no opinion on the given statement. These were developed in collaboration with Professor Magne Supphellen, and aimed to measure the consumers’ cognitive organization of the differentiation strategies.

Saunders et al. (2009) argue that one should keep the same order of response categories to avoid confusion among respondents. We kept the same order of response throughout all questions. However, we displayed the statements that included a comparison with two other products horizontally, and those without comparison vertically. This was done in order to avoid confusion.

### 4.3.1 Pre-test

We conducted the pre-test before the main test to make sure juice with highest quality was significant. The initial number of participants in our pre-test was =30. We had 3 people who misunderstood the instructions (i.e., choose both types of juice while they should choose just one) so they were excluded from the analysis. Therefore, the number of participants used in the pre-test was = 27. In which we had 51.8518519 % female and the median age was 31.

We ran one-way repeated measures ANOVA to check whether our manipulation works. Results show that participants report significantly higher scores on taste quality questions for normal juice (mean = 5.0462963, sd. = 1,2898215) than those for juice mixed with water (mean = 4.1481481, sd. = 1.4415858):  $F(1,50) = 10.6330867$ , p-value = 0.002003.

The juice study functioned as a pre-test to our main experiment. See appendix 9 for questions used on pre-test and part 3 of the main experiment. The juice study showed that provided with an equal quality driver, differentiation based on secondary associations had a positive effect on brand attitude. Further, the study revealed that both associative- and instrumental benefit differentiation based on secondary benefit associations, had a positive effect on brand attitude.

In the juice pre-test I tested whether the secondary benefit associations given in the differentiation strategies were perceived as meaningful. All the given secondary benefit associations were perceived as positive and relevant to the product categories. Considering that the associative- and instrumental benefit differentiation given in the experiment has already been established as relevant to the product categories, it made sense to pursue the same manipulation.

In order to make sure the printed questionnaires were comprehensible for respondents I tried the pre-test on friends and family. It is reasonable to assume that the questions formulated by the juice test were comprehensible, as these had been thoroughly tested prior to our study. However, we wanted to determine the average amount of time it took to complete the survey and to feel assured that our added variables were not perceived as ambiguous or unpleasant to answer. Three pre-tests were conducted on paper. Although this would not give generalizable feedback, it provided valuable input to the questionnaire. The pre-tests confirmed that the questionnaires were comprehensible.

## 4.4 Sample Characteristics

Here I would like to explain the initial sample size and the data cleaning process. A random sample of the adult population (above 18 years and below 80 of age) in the Bergen area. The final dataset consisted of 133 participants who completed the experiment over 3 days (52,6% female, median age=40 years). One person was excluded because of missing age, and three people who did not complete the questionnaire. The remaining sample of 129 participants (53,49% female, median age 40=years) will be used for our analysis and hypothesis testing.

Each participant was allowed to make his/her choice for two alternatives: low vs. high quality, and then explain how the types of brand vary (well known vs. unknown).

	Unknown brand	Well-known brand	Total
Low quality	66	63	129
High quality	63	66	129
Total	129	129	

*Table 2: Participants choice in juice*

## 4.5 Measures

The following section provides an overview of the different variables we studied as well as an overview of how we planned to measure them.

### 4.5.1 Moderator: taste ability

I formed the index of ability to taste by summing up the total scores each received from the different tests.

#### 4.5.1.1 Dependent Variable: Choice of juice

To measure the dependent variable of interest, I asked the participants to indicate their choice of juice between the two alternatives.

#### *4.5.1.2 Control variable: Subjective measure*

I controlled the participants' subjective measure for taste ability, knowledge of drink, pickiness about juice, and subjective measure of the ability to prepare drinks. We form the indices for these variables based on the average score of the corresponding items.

### **4.5.2 Basic Taste Skills**

In part 1 of the experiment we measured each participants basic taste skills. To measure this, participants had to first taste the different basic tastes; sweet, salt, sour, savoury and bitterness (cf. section 2.4.3). They were given three rows with six cups in each (Appendix 7);

Row 1 gave them a taste of each taste including one with water. For row 2 and row 3 one normal and light taste of the basic taste was given, including two cups of water. All participants tasted each cup and answered on part 1 of the experiment (Appendix 7).

### **4.5.3 Participants' Background: Food and food preparing**

Along with demographic information such as gender and age, in the statically questionnaire part, we also included how many glasses of juice one drinks per week, along with the amount of money spent on food and how many times one goes to the store.

The other questions regarding food and food preparing we had six questions with sub questions where one should answer with a number from 1 to 7 (1=totally disagree and 7=totally agree). All questions were done based on result from with Troye & Supphellen (2012) and according to further research regarding this theme.

## **4.6 Descriptive Statistics and Correlations**

Figure 3 present a summary of data.

Variable	Mean	Standard deviation	Median	Min	Max	Range	Skew	Kurtosis
Objective taste ability	4.870	2.420	5.000	0.000	12.000	12.000	0.210	-0.030
Subjective taste ability	4.880	1.040	5.000	1.000	7.000	6.000	-0.430	0.900
Drink knowledge	3.770	1.180	4.000	1.000	7.000	6.000	0.270	-0.210
Juice pickiness	4.000	1.760	4.000	0.000	7.000	7.000	-0.240	-0.410
Drink preparation	3.580	1.360	3.670	0.000	6.330	6.330	-0.530	0.510
Juice attitude	4.970	1.650	5.170	0.000	7.000	7.000	-0.750	0.060

*Figure 3 Descriptive Statistics*

Additionally, to descriptive statistics, there is also a correlation table to point to whether there were any relationships between the variables in the dataset, and to figure out the strength and direction of those correlations (cf. Table 4). The Pearson Correlation varies between -1 and 1. It provides an indication of whether a correlation between variables is present. When there is no correlation, the value is 0. The further a part from 0, the Pearson Correlation is stronger correlated and thus relationship between variables.

	1	2	3	4	5	6
Objective taste ability	1.000	0.016	0.093	0.094	0.056	-0.012
Subjective taste ability	0.016	1.000	0.231	0.078	0.203	0.000
Drink knowledge	0.093	0.231	1.000	0.111	0.467	0.006
Juice pickiness	0.094	0.078	0.111	1.000	0.482	-0.055
Drink preparation	0.056	0.203	0.467	0.482	1.000	-0.062
Juice attitude	-0.012	0.000	0.006	-0.055	-0.062	1.000

*Figure 4 Correlation matrix table*

Figure 4 shows us correlation between variables in the dataset varies. From the correlation matrix table shown, there is a strong correlation between Drink Knowledge ( $r = 0.467$ ) and Drink Preparation, and Juice pickiness and Drink Preparation ( $r = 0.482$ ).

## 5. Result: *Test of Hypotheses*

In this chapter I aim to explain the hypotheses and review the results. The hypotheses were tested using regression analysis. Both coefficients (B) and significance levels (indicated between brackets) include numbers shown for the regression analysis. According to Helgeson & Supphellen (2004) the regression coefficient indicates the effect that an independent variable has on the dependent variable when all other variables are kept at a constant. An independent effect is present if the regression coefficient is significant.

In order to test our hypotheses, we ran a logistic regression on individual choice. The independent variable included the manipulated quality of the juice (1:high vs. 0:low quality), the brand of the juice (1:well known vs. 0:unknown brand), the objective measure of taste ability, the subjective measure of taste ability, the knowledge of drinks, the subjective measure of the ability to prepare drink, the pickiness of juice. We included the interactions between quality, brand, and objective taste ability to test out hypotheses. Because other variables are subjective variables, - some which are the same across alternatives - we tested their effects by including the interactions terms of these variables and quality as well brand types:

Names	Beta	SD	T-values	P-values
Quality	-0.327	1.873	-0.175	0.861
Brand	1.718	3.381	0.508	0.611
Quality X taste ability	0.542	0.258	2.101	0.036
Brand X taste ability	0.063	0.259	0.244	0.807
Quality X brand	6.713	2.550	2.633	0.008
Quality X brand X taste ability	-0.957	0.427	-2.243	0.025
Brand X subjective taste ability	-1.052	0.495	-2.125	0.034
Quality X subjective taste ability	0.136	0.313	0.434	0.664
Brand X drink knowledge	0.665	0.502	1.324	0.185
Quality X drink knowledge	-0.745	0.396	-1.884	0.060
Brand X pickiness of juice	-0.082	0.318	-0.258	0.797
Quality X pickiness of juice	-0.377	0.232	-1.626	0.104
Brand X subjective ability to prepare	-0.087	0.511	-0.171	0.865



drink				
Quality X subjective ability to prepare drink	0.676	0.392	1.725	0.085

*Figure 5 Logistic regressions on individual choice*

## 5.1 Test of Hypothesis 1

In hypothesis 1 we aimed to find if consumers basic taste skills would affect their ability to distinguish between high and low quality beverage products.

The 2-way interaction effect between quality and taste ability is positive and significant ( $b = .542, p < .05$ ). The 3-way interaction effect between quality, brand, and taste ability is negative and significant ( $b = -.957, p < .05$ ).

The results show that when the brand is unknown, people with strong taste abilities will experience a strong effect of quality on choice, thus meaning that strong tasters tend to discriminate better between low vs. high quality juice. However, this effect is reduced to insignificant when the brand is well known ( $b = -.415, p = .085 > .05$ ). (cf. 4.1.1 Measure) . Thus, H1 is supported for unknown brands.

## 5.2 Test of Hypothesis 2

In hypothesis 2 we aimed to find if brand effects was affected by consumer's basic taste skills.

The 2-way interaction effect between brand and ability to taste is not significant ( $b = .063, p > .10$ ). The results show that when the quality is low, people with strong taste ability and weak taste ability will be equally affected by the brand. In contrast, when the quality is high, the effect of brand will be weaker for people with strong taste ability compared to those with weaker tasting abilities ( $b = -.894, p < .05$ ).

In other words, the low tasters are affected by brand to a larger extent compared to strong tasters when the quality is high. Thus, H2 is partially supported.

## 6. Discussion

The purpose of this thesis was to examine the effect basic skill factors of humans had on their ability to distinguish between a high and a low quality product and the moderating impact of branding. Moreover, which affect brand has compared to sense of taste.

The objective was to develop a broader understanding of a brands affect on consumers based on their basic taste skills. Our two research questions must be answered:

***Hypotheses 1:*** There is a positive effect of consumers' taste skills on the ability to distinguish between low- and high quality beverage products.

***Hypotheses 2:*** There is a positive effect of consumers' brand effects affected by their taste skills.

Research regarding consumer's impact on brands is broad, but not when it is combined with the consumer's basic taste and their ability to distinguish between low and high product quality. Therefore, the main objective for this paper to provide new discoveries and insights to the phenomenon of value perceptions affecting consumer choice in food and drinks based on quality and brand, and thus to create a foundation for future studies.

Our study contributes to the limited knowledge on the factors influencing consumer's impact of brands based on taste. Regarding the development of brands within food, this research is an initial step towards understanding consumer behaviour in a food and drink brand context, and also provides a basis, which others may build up upon. Moreover, the research findings also enrich the cross-category literature related to motivational factors influencing basic taste, self-production and brand image, allowing comparison between different juice brands. These topics are discussed and elaborated in the following sections.

## 6.1 Main Findings

The purpose of this thesis was to explore the differential effect basic taste skills has on brand attitude. In hypothesis 1 (H1) we aimed to find if consumers basic taste skills affected their ability to distinguish between high and low quality beverage products. The results show that when the brand is unknown, people with strong taste ability will experience a strong effect of quality on choice, meaning that strong tasters tend to discriminate better between low vs. high quality juice. However, this effect is reduced to insignificant when the brand is well known.

In hypothesis 2 we aimed to find if brand effects were affected by consumer's basic taste skills. The results show that when the quality is low, people with strong taste ability and weak taste ability will be equally affected by the brand. In contrast, when the quality is high, the effect of brand on choice will be weaker for people with strong taste ability compared to those with weak taste ability.

## 6.2 Theoretical Implications

The background for this thesis was to develop a potential understanding of consumers basic taste skills and their desire to buy quality food and drinks, and which effects brands have. Dolich (1969), Graeff (1997) and Ross (1971) have done some investigating on the moderating role of product conspicuousness, though their results were primarily inconclusive. Observation done in this thesis however, offers new insights into the potential role of product conspicuousness.

I personally reached out to Professor Magne Supphellen with the goal of finding more about brand affect on consumers, especially when it came to taste ability. With my background within food and wine courses, lecturing in wine, analysing the market to predict which wines will be suited now and in the future, along with producing my own apple craft spirit, I wanted to learn more about the area. Therefore I contributed my observations when discussing the research, questions and implemented the experiment based on restrictions from NorFima.

We learned from the research that when the brand is unknown, people with strong taste ability will experience a strong effect of quality on choice, meaning that strong tasters tend to

discriminate better between low vs. high quality juice. The interesting part is when the brand is known; more strong tasters chose the well-known brand. It was truly interesting to find clear indications on what affect brand have on use.

Additionally, we have learned that when the quality is low, people with strong taste ability along with those with a weak taste ability, were equally affected by the brand. In contrast, to when the quality is high, where the effect of brand on choice was lesser for people with strong taste ability compared to those with weak taste ability.

The theory is precise on consumers affect on a brand. Humans get attached to feelings and the message a brand represent. To be inline with our inner self, we want our habits to present it. Like Rosenberg (1979, p.7) has defined self-concept as the “totality of the individual’s thoughts and feelings having reference to himself and an object”. The thoughts and feelings people have about ourselves, others, as well as who and what we are, the way we look, and what we can and cannot do.

We have learned from the theory that consumers buy products not only on their functionality, but also of their symbolic meaning, such as the brand (cf. section 2.1 Brand Image). This is highly related to maintaining or enhancing their self-concept. From our research we did find it to be partly true. Graeff (1996) describes consumer’s use of products to express their self-image as: who they are, where they are, what they are, and how they would like to be viewed. Even those who scored strongly on taste were partly affected by the brand. This can underline their ways of expressing their self-image.

I find it necessary to continue research on brand and the relationship to taste ability. There are four reasons.

(1) Well known brands will better understand their impact. Keller (1993) looks at marketers need to be more thorough understanding of consumer behaviour as a basis for making better strategic decisions. Further research would also give them a better understanding of what product they should focus on and what market wants to have more of.

(2) The financial perspective raises interest to estimate the value of a brand more precisely for accounting purposes or for mergers, acquisitions, or divestiture purpose (Keller, 1993). It could also be useful in terms of assets valuation for the balance sheet.

(3) Another perspective is our society's awareness of brands. With a bigger focus on awareness, humans can better understand what draws them to buy certain brands, what they truly want and either tolerate what well known brands do to them or not.

(4) Additional awareness can also help small producers become more important and seek to raise their values. A small brand compared to a well-known brand has a different effect on a given part of the population. Bringing awareness to our unconscious pattern, we will be more aware of our true desires.

### 6.3 Practical Implications

There are several industries that may find implications from the research interesting. According to Keller (1993) companies are constantly investigating how they can make their marketing more (cost) efficient.

As one of the main interests in the study, brand positioning plays a major part regarding their effect and basic taste skill.

Companies try to appeal to consumers and distinguish themselves from competitors, which Kotler & Keller (2012) claims is through brand positioning. Brand positioning can be done effectively when it clarifies for consumers what the function of the brand, the similarities and differences between the brand, and its competitors are. Additionally, addressing why one should buy the brand product and service (Keller, 2012).

When producing products for the market, our research gave a clear result of participant's way of behaving. The results show that when the brand is unknown, people with a strong taste ability will experience an increased effect of the quality on choice, meaning that strong tasters also tend to distinguish better between low vs. high quality juice.

According to this research, the effect of an effective brand image is highly necessary to make consumers prefer its product instead of doing any considerations in other products. This, along with an understanding of how to use marketing to control this, and the effect social media has on sales.

## 6.4 Limitations

This thesis faced several limitations, which I will elaborate in this section. Before I present an overview of general limitations, I will present validity. Saunders et al. (2009) describes validity as “the extent to which data collection method or methods accurately measure what they intended to measure. Four types of validity are presented: (1) internal validity, (2) external validity, (3) construct validity and (4) statistical conclusion validity.

### 6.4.1 Internal Validity

Internal validity describes Saunders et al. (2009) as: “*the extent to which the findings can be attributed to the interventions rather than any flaws in the research design*”. In those cases internal validity is high, the results can be attributed to the intended interventions to the experiment and not to the errors in the experiment. Saunders et al. (2009) point out that there are several threats to internal validity, which may affect the results of the study. Further I will investigate each of the other threats further.

The aim of this research was to study the differential effect on brands along with the result from the basic taste skills. Therefore it did not matter which brand we used for the juice in our experiment since I did not take it into account for our analyses. Respondents were encouraged to choose one of the given names of the brands of their best liking to help us avoid the history threat. Participants were randomly assigned to the different conditions.

According to Saunders et al. (2009), a testing threat occurs when respondents think or feel that the results for the research may affect them, either positively or negatively. Before the main experiment, I conducted a pre-test. Those participating in the pre-test did not participate in the main test. Therefore, none of the participants felt any pressure of retaking the test based on their previous answer. All participants in each group were in the same room when taking

the test. Even though people were not supposed to talk, there were a few who did anyway. I believe the testing threat was not fully avoided.

The instrumentation threat, I believe was avoided. This was because I administered the survey only once per respondent over a very short period of time, without any pre-test and additional information.

In the mortality threat Saunders et al. (2009) refers to, respondents dropped out midway, which affected the results of the study due to a number of incomplete responses recorded. All of the respondents who showed up for our test responded to the whole survey. However, there was one respondent who did not write age and was therefore removed from the dataset. Therefore I managed to avoid the mortality threat.

Due to time frame respondents were exposed to the survey (approximately 10-15 minutes), it is unlikely for the participants to have psychologically or physically changed in any way that would affect the result. The maturity threat was therefore avoided.

In the survey experiment, each participant had equal probabilities of being assigned to one of four groups. Random assignment ensured that the groups assigned to each condition were equal (Kirk, 1982). Therefore, random assignment also contributed to the internal validity of the study.

#### **6.4.2 External Validity**

Saunders et al. (2009) describes that external validity is: *“the extent to which the research results are generalizable”*. More precisely, to what degree the conclusions in the study would hold up for other people in other places and at other times.

NorStat chose the test subjects in this study. Therefore, the subjects were an array of different people, ages, genders and occupations. Even though this was a main advantage and made the test more heterogeneous and culturally diverse one disadvantage was that the study had most women at the age of 40. At the same time, the variety of participants was done quite well in regards to diversity. I would assess external validity as satisfactory.

### **6.4.3 Construct Validity**

Construct validity is described Saunder et al. (2009) as: “*the extent to which your measurement questions actually measure the presence of those constructs your intended them to measure*”. When evaluating the construct validity in the survey, I considered: *face validity*, *convergent validity* and *divergent validity*.

According to Trochim (2006a) face validity is a subjective measure to see whether the questions used, seems to reflect what one is indented to measure. One way is to look at the constructs and determining whether it is logically make sense. The majority of the questions were already used in existing research and developed together with Professor Magne Supphellen. Even though some of the questions were used before and tested, I can assume face validity to be relatively medium high. Trochim (2006a) informs that face validity on its own is not sufficient to evaluate validity.

Similarities between constructs are presented in convergent- and discriminate validity. Firstly, convergent validity indicates whether constructs that should be related to each other, are in fact related. Secondly, divergent validity indicates whether constructs that should be related, are not. By testing further correlation analyses, convergent- and divergent validity can be tested.

Trochim (2006a) points out that similar measures should have high correlation, whereas the correlation between dissimilar measures should be low. Figure 4 presents the results of the correlation analysis with items measured together. Our result showed the correlation is medium strong correlation between Drink Knowledge ( $r = 0.467$ ,  $p\text{-value} < 0.01$ ) and Drink Preparation, and Juice pickiness and Drink Preparation ( $r = 0.482$   $p\text{-value} < 0.01$ ).

### **6.4.4 Statistical Conclusion Validity**

Statistical conclusion validity is: “*the degree to which conclusion we reach about relationships in our data are reasonable*” (Trochim, 2006b). Saunders et al. (2009). This addresses that whenever a conclusion is made, two types of errors may arise: Type 1 error or Type II. When a conclusion is made that a something is true, when in fact it is not, is type 1 error. While for a type II error is when a conclusion is made that something is false when



actually it is true. Through the thesis, two hypotheses were supported, resulting that the research may be subjected to a Type I error.

Different reasons could cause a Type 1 error. Due to limited time frame, the sample consisted of 133 participants. Trochim (2006b) addresses that the sample size was sufficiently large to obtain significant results; this may affect the statistical power of our analysis. For a larger sample size, this could have been avoided.

Even though the statistical conclusion validity of the research may be exposed to Type I error, I believe there are enough measures to assume the conclusion can be reasonable deducted from the analyses and that the conclusion validity is satisfactory.

#### **6.4.5 General Limitations**

The research includes several other limitations to the study worth considering. The limitations are mainly related to the juice test.

Due to the limited time, the juice test was pre-tested and approved for the main test. It was tested among my work colleagues, which mostly consists of persons between ages 30 and 40. Without further questioning, the same quality test was done in the main test. For all four groups every test consisted of low-quality juice in cup A, while high-quality juice always was in cup B. In other words, every participant for the main test was trying low-quality juice first followed by high-quality juice. Compared to the pre-test, half the group was given this order of juice, while the other half was given the opposite order. For the main test, every group had different brand names and qualities represented on each cup. One limitation was done when I did not change the order of low-quality and high-quality. Instead, the first half should have tasted low-quality first, and thus low-quality last for the second half. In doing so, the result would have been more accurate.

#### **6.5 Further research**

Because there aren't many similar studies, the first suggestion should be to replicate the study. A suggestion would be to include a larger group. Though the diverse sample in terms of age, gender and occupations were well represented, I would recommend to use the same formula.

To gain a larger understanding of the relation between participants basic taste skills and their ability to distinguish low and high product quality, one or two more tests could be added in part 3.

Another suggestion could be adding a deeper understanding of participants preference in brands, and an indication of why they believed certain brands were better than similar one. Even though brand attitude is known to positively influence purchase intentions, the relation is not linear. To go deeper into why some people prefer some brands and for what reason, we could also gain knowledge from those with an opposite opinion.

Further research could also address the issue of cooking performance. In doing so there would be a more precise understanding of their ability to utilize products, which products were preferred and the consumers ability to balance the basic tastes in the food. Combining it with cooking performance in a basic taste skill along with questions and a cross test could give us a broader perspective on consumers ability to think, their perception of themselves and their affect on brands.

Another perspective on the same theme is to address the effect social media has. What does evolution and what purpose basic taste once had, due to todays focus on trends, healthy lifestyle, body image and of what the media covers of diet along with what healthy, it could be interesting.

Consumer behaviour in social situations may vary a lot on reference group. One could also focus on when a certain brand is bought and at when it's "ok" to buy another brand. This along with the important of the image a brand gives them.



## 7. References

- Anderson, J.R. (1983). *The Architecture of Cognition*. (1st ed.)
- Ajzen, I. (2008). Consumer Attitudes and Behavior. In P.M. Haugtvedt, & F.R. Cardes (Eds.), *Handbook of Consumer Psychology* (pp.525-548). New York: Lawrence Erlbaum Associates.
- Allison, R. I., & Uhl, K. P. (1964). Influence of beer brand identification on taste perception. *Journal of Marketing Research*, 1(3), 36-39.
- Baltas, G., & Saridakis, C. (2010) Measuring brand equity in the car market: a hedonic price analysis. *Journal of the Operational Research Society*, Volum 61, Issue 2, pp 284-293.
- Bartoshuk, L.M., Duffy, V.B., Reed, D. & Williams, A. (1996). Supertasting, earaches and head injury: Genetics and pathology alter our taste worlds. *Neuroscience & Biobehavioral Reviews* Volum 20, Issue 1, 1996, p 79-87.
- Bjorvatn, Kjetil, and Tina Søreide. 2003. Corruption and market reform. In *Discussion Paper*. Bergen: NHH Department of economics.
- Birdwell, A. E. (1968). A study of influence of image congruence on consumer choice. *Journal of Business*, 41, 76-88.
- Boye, Knut, and Geir Severinsen. 1996. *Finansielle emner*. 10. utg. Oslo: Cappelen akademisk forl.
- Brealey, Richard A., and Stewart C. Myers. 2003. *Principles of Corporate Finance*. 7th ed. Boston, Mass.: McGraw-Hill/Irwin.
- Breslin, P.A.S., (2013). An Evolutionary Perspective on Food and Human Taste. *Current Biology* 23, R409-R418.
- Chiras, D.D., (2008). *Human Biology* (9<sup>th</sup> ed.). Jones and Barlett Publishers, Inc.
- Copeland, Thomas E., Tim Koller, and Jack Murrin. 2000. *Valuation : measuring and managing the value of companies*. 3rd ed, *Wiley finance*. New York: Wiley.

- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of marketing research*, 28(3), 307-319.
- Erskine, R. (30.11.2017). Brandless, The No-Brand Brand, Actually Teaches Brands The Importance Of Branding. Retrieved from <https://www.forbes.com/sites/ryanerskine/2017/11/30/brandless-the-no-brand-brand-actually-teaches-brands-the-importance-of-branding/#28c42a6747a6>
- Frihette, J. & Wolf, E. (01.22.2013). Global Consumer more likely to buy new products from familiar brands. Retrieved from <https://www.nielsen.com/us/en/press-room/2013/global-consumers-more-likely-to-buy-new-products-from-familiar-b0.html>
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Helgeson, J. G., & Supphellen, M. (2010). A conceptual and measurement comparison of self-congruity and brand personality: The impact of socially desirable responding. *International Journal of Market Research*, 46, 205-233.
- Hong, J. W., & Zinkhan, G. M. (1995). Self-Concept and Advertising Effectiveness: The Influence of Congruency, Conspicuousness, and Response Mode. *Psychology & Marketing*, 12 (1), 53-77.
- Hoyer, W.D., & MacInnis, D.J. (2010). *Consumer Behavior* (5<sup>th</sup> ed.). Mason, OH: South-Western Cengage Learning.
- Keller, K. L. (1993). Conceptualizing, Measuring, and Managing. Customer-Based Brand Equity. *Journal of Marketing* 57 (January), 1-22.
- Keller, K.L. (2001). Building customer-based brand equity: A blueprint for creating strong brands.
- Keller, K.L. (2008). *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*. (3<sup>rd</sup> ed.) Upper Saddle River, New Jersey, Pearson Education, Inc.

- Keller, K.L. (2009). Building strong brands in a modern marketing communications environment. *Journal of Marketing Communications*, 15 (2-3), pp.139-155.
- Keller, K. L. (2012). Strategic Brand Management: Building, Measuring, and Managing Brand Equity (4<sup>th</sup> ed.). New Jersey: Prentice Hall.
- Kirk, R.E. (1982): Experimental design. John Wiley & Sons, Ltd.
- Korneliussen, I. (2014). Women smell better than men. ScienceNordic. (April 11, 2012). (Aug. 3, 2014) <http://sciencenordic.com/women-smell-better-men>
- Kotler, P., & Keller, K.L. (2012). Marketing Management (14<sup>th</sup> ed.). Upper Saddle River, NJ. Prentice Hall.
- Gabrielsen, Hanne Cathrin, and Turid Moldenæs. 2002. Kvalitetssikring og etisk regnskap: en nyinstitusjonelt perspektiv. *Beta. Tidsskrift for bedriftsøkonomi* (1):28-50.
- Garvin, D. A. (1984). What Does “Product Quality” Really Mean?. *Sloan management review*, 26(1), 25.
- Graeff, T.R. (1997). Consumption Situations and the Effects of Brand Image on Consumers’ Brand Evaluations. *Psychology & Marketing*, 14(1), 49-70
- Green, P.E., Maheshwari, A, & Rao, V.R. (1969). Self-concept and brand preference: an empirical application of multidimensional scaling. *Journal of Marketing Research Society*, 4-343-360.
- Grubb, E.L., & Stern, B.L. (1971). Self-concept and significant others. *Journal of Marketing Research*, (, 382-385.
- Hultén, Bertil . (2015). Sensory Marketing: Theoretical and Empirical Grounds. 1<sup>st</sup> published. New York: Routledge
- Hong, J.W., & Zinkhan, G.M. (1995). Self-Concept and Advertising Effectiveness: The Influence of Congruency, Conspicuousness, and Response Mode. *Psychology & Marketing*, 12(1), 53-77.

- Gardinal, Sarah Fisher, D. Scott Clemons, Robert B. Woodruff, David W Schumann, and Mary Jane Burns (1994), "Comparing Consumers' Recall Of prepurchase and Postpurchase Product Evaluation Experience," *Journal of Consumer Research*, 20 (March), 548-60.
- Graeff, T.R. (1996). Image Congruence Effects on Product Evaluations: The Role of Self-Monitoring and Public/Private Consumption. *Psychology & Marketing*, 13(5), 481-499.
- Green, P. E., Maheshwari, A, & Rao, V. R. (1969). Self-concept and brand preference: an empirical application of multidimensional scaling. *Journal of Marketing Research Society*, 4, 343-360.
- Grubb, E. L., & Stern, B. L. (1971). Self-concept and significant others. *Journal of Marketing Research*, 8, 382-385.
- Levy, S. J. (1959). Symbols of Sale. *Harvard Business Review*, 37(4), 117-124.
- Lillestøl, Jostein. 2002. Value at risk: sett med en statistikers øyne. In *Essays on Uncertainty: Festskrift til Steinar Ekerens 60-årsdag.*, edited by P. Bjerksund and Ø. Gjerde. Bergen: Norges handelshøyskole.
- Malhotra, N. K. (1988). Self-Concept and Product Choice: An Integrated Perspective. *Journal of Economic Psychology*, 9, 1-28.
- Matlin, M.W. (2009). *Cognitive Psychology*. (7<sup>th</sup> ed.) Hoboken, NJ, John Wiley & Sons (Asia) Pte Ltd.
- Monirul, I. M., & Han, J. H. (2012). Received quality and attitude towards tea & coffee by consumers. *International Journal Of Business Research and Management (IJBRM)*, 3(3), 100-112.
- Parasuraman, A., Zeithaml, V. A, & Berry, L.L. (1988). A conceptual model of service quality and its implications for future research. *The Journal of Marketing*, 49(4), 41-50.
- Park, C. W., Jaworski, B. J., & McInnis, D. J (1986). Strategic brand image-concept management. *Journal of Marketing*, 50, 135-145.

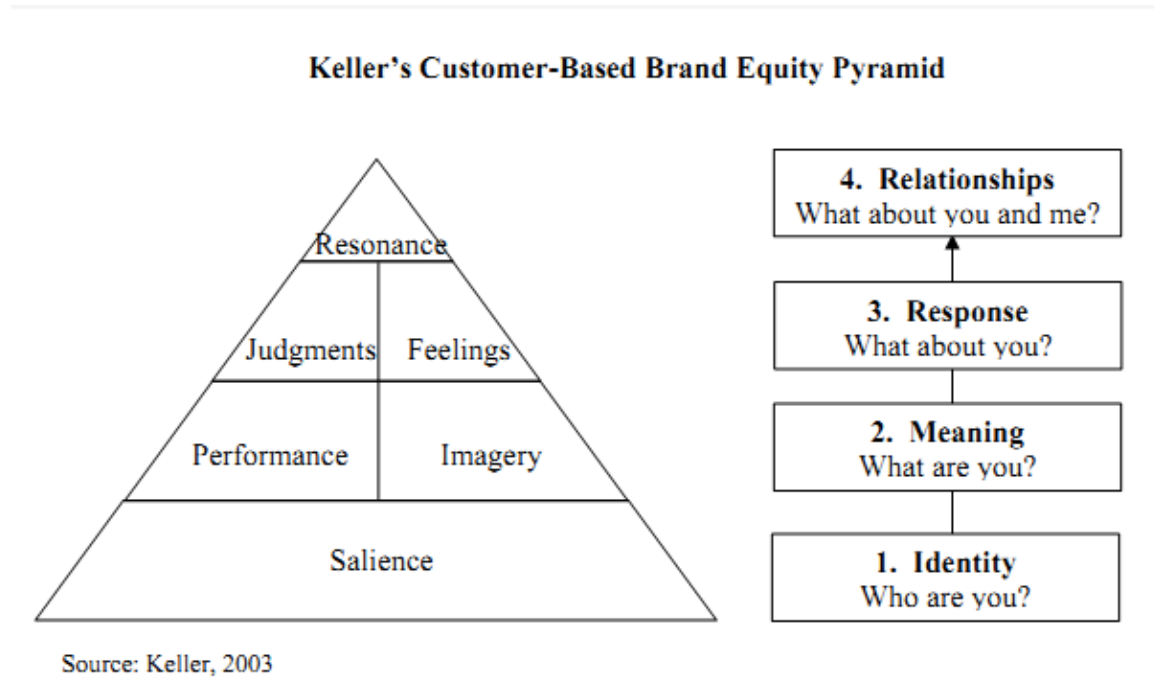
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic Books
- R Core Team (2019). *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.R-project.org>
- Rødbotten, M. (2015). *Sensorikk, Måling med menneskelig sanser (3.utgave)*. *Kopinor Pensum*, Oslo
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students (5<sup>th</sup> ed.)*. Essex: Pearson Education Limited.
- Sirgy, M. J. (1982). Self-Concept in Consumer Behaviour: A Critical Review. *Journal of Consumer Research*, 9, 287-300.
- Sirgy, M. J. (1985). Using Self-Congruity and Ideal Congruity to Predict Purchase Motivation. *Journal Of Business Research*, 13, 195-206.
- Supphellen, M. STAN: A General Framework for Defining Product and Corporate Positioning.
- Teas, R. K., & Agarwal, S. (2000). The effects of extrinsic product cues on consumers' perceptions of quality, sacrifice, and value. *Journal of the Academy of marketing Science*, 28(2), 278-290.
- Trochim, W.M.K. (2006a). Measurement validity types. Retrieved from <http://www.socialresearchmethods.net/kb/measval.php>
- Trochim, W.M.K. (2006b). Conclusion Validity. Retrieved from <http://www.socialresearchmethods.net/kb/concval.php>



# 8. Appendix

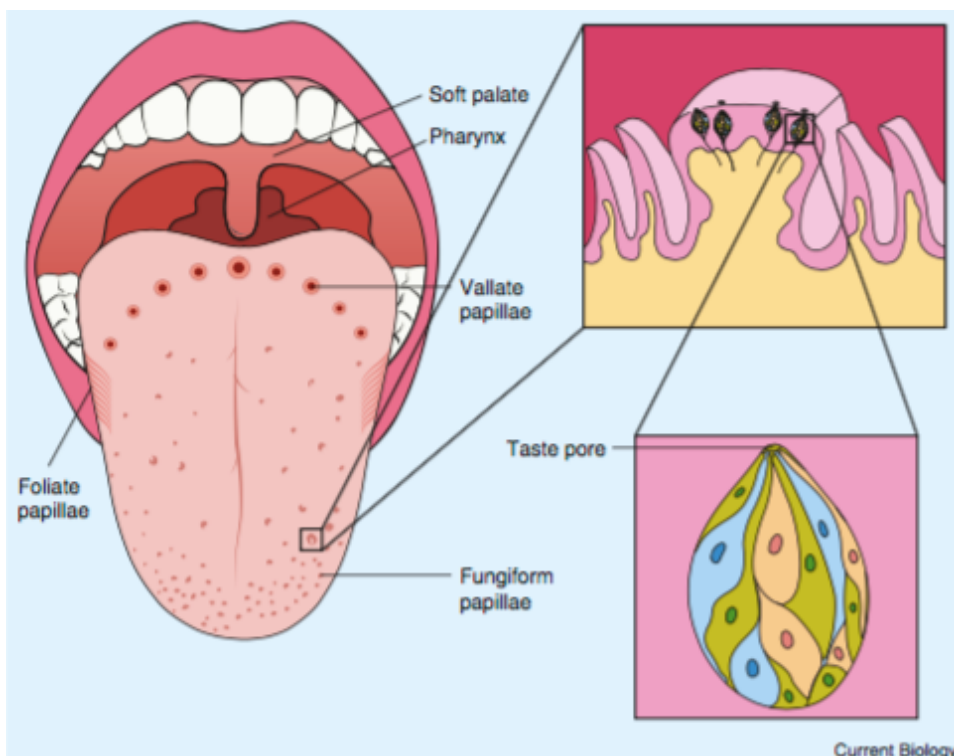
## 8.1 Appendix 1 - CBBE model

Keller (2008) presents the customer-based brand equity model (referred to as CBBE)



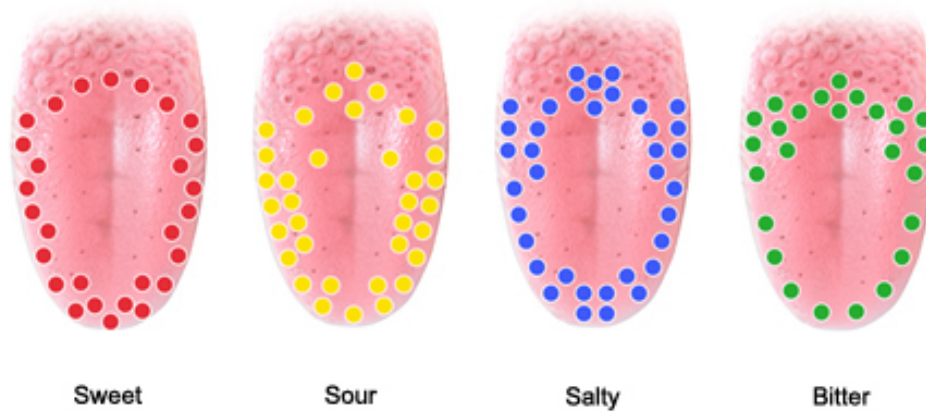
## 8.2 Appendix 2 – Taste buds

Taste buds



### 8.3 Appendix 8 - Primary flavors

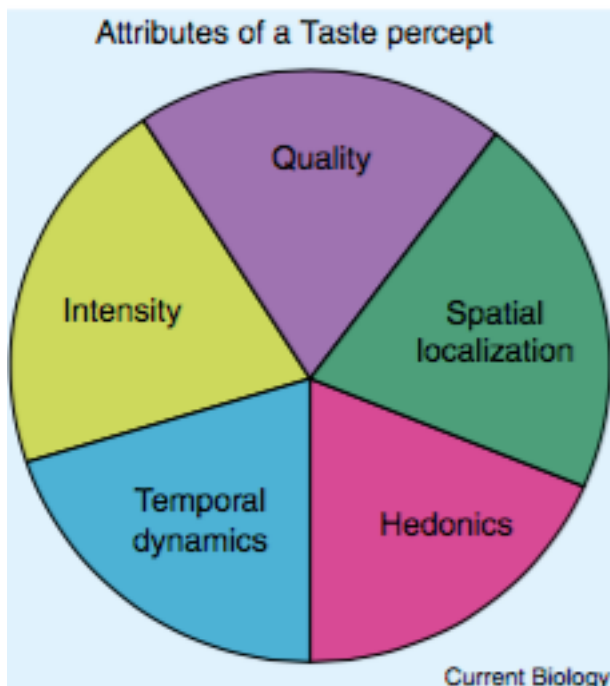
Underneath you can look how the tongue is divided with in sensitivity.



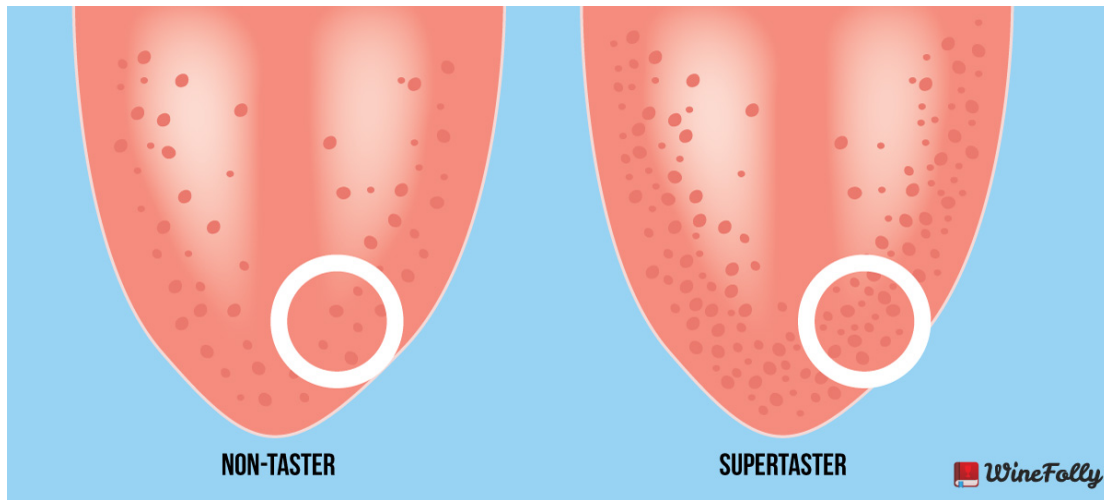
*All tastes can be perceived equally well everywhere on the tongue.  
People used to think that there were specific zones for sweet, sour, salty and bitter –  
but this has been proven to be wrong.*

### 8.4 Appendix 4 - The attributes of a taste percept

Each taste percept may be subdivided into multiple taste attributes that are integrated to form a single taste sensation.



## 8.5 Appendix 5 - Super taster versus non-taster



## 8.6 Appendix 6 - Sensory evaluation of food

Sensory evaluation of food – Lawless and Heymann (1999):

<b>Main points for analysis</b>	<b>Important resourcedetailj and</b>	<b>Check</b>
Purpose of the experiment	Ex. product development, durability study, quality control.	
Experimental Design	Number of products, intervals, breaks etc.	
Method selection	Differential test, descriptive analysis, questionnaire design.	
<b>Judges / respondents</b>	<b>Review of details around judges</b>	<b>Check</b>
Recruiting (who, how, when)	Details	
Selection	Choice of the right respondents in relation to product, use etc. if necessary.	
Training	If necessary for the current test	
<b>Sample preparation and serving procedure</b>	<b>Are the necessary resources and equipment in place?</b>	<b>Check</b>
Sample size	Details	
Preparation Method	Details	
Temperature	Frozen, cool, room temperature, heater?	
<b>Trial Presentation</b>	<b>Details of the practical implementation</b>	<b>Check</b>
Rinse water and / or unsalted biscuits to clean the oral cavity	If necessary	
Orientation and instructions to the judges	Details	
Coding of samples	Details	
Answer sheets or designs of tests in relevant software ware	Details	
Time and length of the analysis	Details	

Test Facilities	Internal / external	Check
Locality	Details	
Judge Bays	Details	
Equipment in the judge booths	Details	
Prepareringsrom	Details	
Temperature, light etc.	Details	

## 8.7 Appendix 7 - Part 1: Taste test

### Steg 1: Smaksprøve - ulike væsker

Skjemaet tar for seg grunnsmakstesten. Vi er ute etter *dine subjektive vurderinger og opplevelser*. Du skal ikke skrive navnet ditt noe sted i skjemaet, så du er sikret full anonymitet. Svarene skal kun brukes til forskning.

Rad 1 består av de 5 forskjellige grunnsmakstestene, rad 2 og 3 er en blanding av de forskjellige grunnsmakene som du skal finne ut av. De består av en sterk og en svak blanding. Start med å smake på kopp 1, deretter kopp 2 osv. Du skal ikke gå tilbake å endre på svarene dine.. Stett ring rundt ditt valg.

**Rad 1:** Søtt - salt - søtt - bittert - umami - vann

### **RAD 2:**

<b>Kopp 1:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 2:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 3:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 4:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 5:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 6:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann

### **RAD 3:**

<b>Kopp 1:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 2:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 3:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 4:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 5:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann
<b>Kopp 6:</b>	Salt	Søtt	Bittert	Umami	Syrlig	Vann

## 8.8 Appendix 8 - Part 2: Questions: About food and cooking

### Spørreskjema 2: Om mat og matlaging

Skjemaet handler om mat og matlaging. Vi er ute etter *dine subjektive vurderinger og opplevelser*, det finnes ingen «riktige svar». Du skal ikke skrive navnet ditt noe sted i skjemaet, så du er sikret full anonymitet. Svarene skal kun brukes til forskning.

1. Hvor enig er du i utsagnene nedenfor om dine kunnskaper på mat og drikke? 1=helt uenig, 7=helt enig. Sett en ring rundt ditt svar.

	Helt uenig	Helt enig
Jeg har relativt god kunnskap om mat	1 2 3 4 5 6 7	
Jeg kan nok mer om mat enn de fleste av mine venner	1 2 3 4 5 6 7	
I vennekretsen er jeg kjent for å kunne mye om mat	1 2 3 4 5 6 7	
Jeg har relativt god kunnskap om drikkeprodukter	1 2 3 4 5 6 7	
Jeg kan nok mer om drikkevarer enn de fleste av mine venner	1 2 3 4 5 6 7	
I vennekretsen er jeg kjent for å kunne mye om drikkevarer	1 2 3 4 5 6 7	

2. Hvor god kjennskap har du til juicemerkene nedenfor? 1=kjenner ikke, 7=kjenner godt.

	Kjenner ikke	Kjenner godt
Cevita	1 2 3 4 5 6 7	
Fruitura	1 2 3 4 5 6 7	
Sunniya	1 2 3 4 5 6 7	
Golden	1 2 3 4 5 6 7	
Sunny	1 2 3 4 5 6 7	
God Morgen	1 2 3 4 5 6 7	

3. Evnen til å identifisere ulike smaker varierer fra individ til individ. Hvordan vil du selv vurdere din evne til å identifisere følgende smaker i mat eller drikke?

	Relativt svak	relativt god
Min evne til å identifisere salt er:	1 2 3 4 5 6 7	
Min evne til å identifisere surt er:	1 2 3 4 5 6 7	
Min evne til å identifisere søtt er:	1 2 3 4 5 6 7	
Min evne til å identifisere bittert er:	1 2 3 4 5 6 7	

## 8.9 Appendix 9 – Part 3: Pre-test and taste test

### Skjema 1: Smakstesten

E1. Hvilket alternativ valgte du? \_\_\_\_\_

E2. Hva er din totalvurdering av smaken for de to variantene?

<u>Variant A</u>	<i>Helt uenig</i>	<i>Helt enig</i>
Jeg likte denne juicen godt	1 2 3 4 5 6 7	
Denne juicen smakte godt	1 2 3 4 5 6 7	
Denne juicen var smakfull	1 2 3 4 5 6 7	
Hvordan var syrligheten?	Lite syrlig	1 2 3 4 5 6 7 Meget syrlig
Hvordan var søthetsgraden?	Lite s <del>Søt</del>	1 2 3 4 5 6 7 Meget søt
Hvordan var bitterhetsgraden?	Lite bitter	1 2 3 4 5 6 7 Meget bitter
Hvordan var surhetsgraden?	Lite sur	1 2 3 4 5 6 7 Meget sur
Hva ville du være villig til å betale for 1 liter av denne juicen? Svar _____ kroner		

<u>Variant B</u>	<i>Helt uenig</i>	<i>Helt enig</i>
Jeg likte denne juicen godt	1 2 3 4 5 6 7	
Denne juicen smakte godt	1 2 3 4 5 6 7	
Denne juicen var smakfull	1 2 3 4 5 6 7	
Hvordan var syrligheten?	Lite syrlig	1 2 3 4 5 6 7 Meget syrlig
Hvordan var søthetsgraden?	Lite søt	1 2 3 4 5 6 7 Meget søt
Hvordan var bitterhetsgraden?	Lite bitter	1 2 3 4 5 6 7 Meget bitter
Hvordan var surhetsgraden?	Lite sur	1 2 3 4 5 6 7 Meget sur
Hva ville du være villig til å betale for 1 liter av denne juicen? Svar _____ kroner		

TAKK FOR INNSATSEN!



## 8.10 Appendix 10 – Instructions from NIBIO

Gjennomføring av eksperiment fyrste veka i mars.

### Treng:

- Vekt som handterer 0.1 gram
- Vatn – brukt likt på alt. Anbefaler Imsdal (veg vatnet, 900g)
- Serveringsbrett: tre rader med prøver
- Einganssprøyter frå Apoteket. Nye for kva runde. Bestill.
- Like beger, hels plast. Totalt 17\*antall som skal vere med. Bestill
- Teip
- Tusj

### Anbefalt litteratur:

Sensorikk, Måling med menneskelige sanser av Marit Rødbotten

### Grunnsmaksblandingane:

	Svak (gram pr. liter)	Sterk (gram pr. liter)
Søt	6	8
Salt	0,6	0,9
Sur	0,15	0,20
Bitter	0,14	0,27
Umami	0,34	07

### Gjennomføring:

1. Informer før gjennomføring av prøven:
  - Unngå å drikke kaffe eller et mat ein time før gjennomføringa.
  - Unngå bruk av parfyme eller andre lukter.
2. Bland ut prøvane, la dei stå i minimum 2 timar før gjennomføringa. Vatnet skal ha romtemperatur.
3. Informer om testen + drikk vatn mellom prøvane.

### **Del 1 – test av sanseapparatet:**

4. Brett med alle prøvane:
  - 5 grunnsmakar med lapp. Formål at dei skal bli observang på korleis dei ulike sansane oppleves i munnen.
  - To rader med 6 prøvar per rad. Prøvane skal innehalde ein svak og sterk blanding og to med vatn.
5. Skjema for grunnsmakstesten, fyll inn p ark.

### **Del - test av kvalitet:**

6. Test av kvalitet: to forskjellige juicar av ulik kvalitet. Kva er best kvalitet?
7. Test av merke og kvalitet. Kva juice er best gitt merkenamne?
8. Svar på skjema (kan nytte google sheet eller ark)

### **Evaluering:**

Om ein får til den svake testen, men ikkje den sterke kan ein stille seg spørsmålet om ein tippa eller faktisk klarte det. Regel er at dei ikkje få får openg.