A field experiment to the effect of visualizing artisanal production on sales of whole wheat and white bread in a self-service restaurant

And the possible mechanism behind

MSc Thesis

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Abstract

The objective of this field experiment was to get insight in the effect of an artisanal sales context as nudge to guide consumers' bread purchases to whole wheat bread. A two (artisanal sales context; product-only sales context) by two (whole wheat bread; white bread) quasi-experimental design was set up. Consumers' bread purchases were measured during lunch in a self-service restaurant in the Netherlands. Observational data and cash register data about consumers' bread choices were collected during fifteen days. Results indicate that consumers' purchases were not influenced by type of sales context or type of bread. This implies that it is not possible to stimulate sales of whole wheat bread by exposing consumers to authentic attributes and an authentic baker engaged in the bread baking process. However, customers apparently do not mind whether they buy a whole wheat or white sandwich during lunch. This research made thus clear that solely making available whole wheat bread is enough to increase whole wheat consumption. Future research could focus on the (changing) perception with regard to certain attributes of bread on an artisanal sales context compared to bread on a product-only sales context, to get more insight in the food perceptions of consumers.

Key words: Nudge; Nudging; Whole wheat; Bread; Artisanal; Sales context; Consumer behaviour

Dear reader,

After more than six months of thinking, writing, discussing, doing research and analyzing, is here my Master thesis. This thesis is about an authentic atmosphere as nudge towards whole wheat bread. Assistance from different sides made research into this topic possible. In this section I would like to take some time to express my gratitude to them.

As during my Bachelor thesis, I preferred to execute a field experiment. In my view, a field experiment is the type of study most fun to do: you are working in practice and you are studying actual consumer behavior. Also the related challenges due to the many factors which may influence the study makes a field experiment interesting. The execution of this experiment I owe to the great collaboration of Hotelschool The Hague in Amsterdam. Carel van Elsenburg has played a major role in this collaboration and has consulted about the possibilities for the present study in their self-service restaurant. Meanwhile, I would like to thank the students who had the responsibility for the restaurant during the weeks of study for their continuously refilling of the bread on the displays and besides their flexibility for all the changes. Carel, Babette, Helena, Iina, and their team, thanks a lot!

I would like to thank my supervisor Ellen van Kleef for her great involvement in this study. Next to this Master thesis, she also supervised me during my bachelor thesis. I would like to thank her for the nice conversations about the formation of this study and for her valuable feedback on my writing. Like during my bachelor thesis, it was very pleasant to work with her! Also Hans van Trijp, my second supervisor, deserves a vote of thanks. Discussing this thesis with him provided new insights which have contributed to the experiment.

Inspiration for the layout of the artisanal sales context has been found when visiting the bakery of Lucas Vermeulen, better known as 'Bakkertje Deeg'. His bakery is decorated with authentic attributes which have given inspiration for our study. Lucas, thank you for inviting us for a delicious lunch in your bakery and for making the authentic baker clothes available.

Other people who have contributed to this study are Ilse Polet and Monique Vingerhoeds on behalf of Food & Biobased Research. Both have contributed to the set-up of the present study. Besides, Ilse supported this study by being the second observer on several days of the study and by providing feedback on the writing of this thesis. Finally, also Frank Janssen has let his thoughts on the execution of the study, on behalf of NBC (Dutch Bakery Centre).

It was a pleasure to work on this project. However, I now look forward to a new challenge, namely an internship at the Chocomel team of FrieslandCampina.

I hope you will read this thesis with pleasure.

Noraly Duizer - Wageningen, May 2015

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1. Introduction

Fibres are essential substances for the body. A dietary pattern high in fibres has several positive consequences for the body. It stimulates the intestinal activity (Gezondheidsraad, 2006). In addition, fibres contribute to a satiated feeling after a meal while it contains only a few calories, which on the long term counteracts obesity (e.g. Gezondheidsraad, 2006; Anderson, 2003; Van Rossum et al., 2011). However, in many countries the intake of fibres is far below the recommended level. To be more specific, the fibre intake of ninety percent of the Dutch population is insufficient (Gezondheidsraad, 2006). The intake of an average Dutch adult is about 2,2 gram for woman and 2,6 gram for man, while 3,4 gram fibres per Mega Joule is recommended (Van Rossum, Fransen, Verkaik-Kloosterman, Buurma-Rethans, & Ocke, 2011).

Food choices are decisive for the substances that enter the body. Whole wheat bread is one of the main products consisting of a high fibre level and can therefore contribute to an enhanced fibre intake. Its fibre content is almost three times higher than that of white bread (NEVO, 2013). In addition, whole grains reduce the risk of chronic disease including cancer and cardiovascular diseases and extends the life expectation (Wu et al., 2015; Slavin, 2004; Anderson, 2003; Keogh et al., 2003; Faivre and Bonithon-Kopp, 1999; Hill, 1997; Slavin, Jacobs, & Marquart, 1997; Bingham, 1990; Bornet et al., 1987). Next to this, whole grains also contain a high level of vitamins and minerals such as B-vitamins, vitamin E and iron. Furthermore, the intake of saturated fat is lowered and the nutrient density of the nutrition is improved when people consume the recommended amount of whole wheat bread. So, whole grains have many positive effects on health. It is therefore valuable to find ways to stimulate whole wheat bread intake. This is also confirmed by a survey by Van Rossum et al. (2011) among people aged 7 to 69 in The Netherlands between 2007 and 2010, which made clear that the Dutch diet can be improved by increasing the consumption of basic foods such as bread. Especially the intake of wholemeal products should be stimulated (Van Rossum et al. 2011; Truswell, 2002), since these products will improve the dietary concentration of essential micronutrients as well as the fibre intake. Consequently, this will help to reduce the energy density and would facilitate the maintenance of a healthy energy balance.

Although Dutch people do perceive whole wheat bread as the most healthy option (NBC, n.d.), only about thirty percent of the Dutch population consumes whole wheat bread on a daily basis nowadays. (This is an estimation based on market research knowledge, attitude and behaviour towards whole grain and dietary fibre in relation to bread; Productschap akkerbouw, 2011). Apparently, people do not always make choices according to their health beliefs. Therefore, the question remains how consumers can be tempted to choose whole wheat bread on daily basis.

Different attempts have already been made to help people make healthy choices (e.g. the campaign ‘Whatever you do whole grain is always good’ [translated from Dutch], BNO, n.d.). Although it sounds reasonable that an increase in educational activities related to healthy consumption increases knowledge and consequently influences eating behaviour in the desired way, in practice it proves to be not sufficiently effective (Raad Voor Maatschappelijke Ontwikkeling, 2014; Swinburn, Egger, Raza, 1999; Dahlgren, Whitehead, 1992; Ingham, Woodcock, Stenner, 1992; Bettinghaus, 1986). Decision making is not only influenced by knowledge but also by biases and cues in the environment (Walls, Peeter, Loff, & Crammond, 2009). Simply encouraging consumers to make healthier choices is insufficient: the environment should be adapted in a way that ‘healthy options are far more

accessible, available, and desirable than unhealthy alternatives' (Walls, Peeters, Loff & Crammond, 2009). The purpose of this study is to make use of cues and biases in such a way that the healthy choice will be the *easiest* and the *preferred* one.

Helping consumers to make the best choice will be done in this study by means of nudging. Nudging is the encouragement of certain behaviour by subconscious triggers which appeal to the basic senses. However, consumers still have the freedom to make their own choice: people are not forced to the encouraged option. The way a choice is presented influences what a decision-maker chooses (e.g. Hanks, Just, Smith and Wansink, 2012) and can therefore be deployed to guide unconscious behaviour to the best choice. In general, nudging appears to be a promising strategy in promoting food choices (e.g. Hanks, Just, Smith and Wansink, 2012; Van Kleef, Vrijhof, Polet, Vingerhoeds, and de Wijk, 2014). In the present study, whole wheat bread is the encouraged option due to the many advantages for a healthy body and will therefore be promoted by use of nudges. An attempt will be made to make the utilitarian choice the hedonic choice as well. This goal is a modern marketing strategy called experiential marketing: The focus on features-and-benefits is replaced by a focus on consumer experiences (Schmitt, 1999).

Nowadays, the word 'artisanal' is being used as a marketing tool to attract consumers, even when the product does not meet the criteria for an artisanal product (e.g. 'artisanal' is assigned to bread in the supermarket which is only baked off). Apparently, 'artisanal' is supposed to evoke associations that subsequently influence sales in a positive way. We expect that the visualizing of the artisanal production method evokes certain positive associations with the product, which consequently outweighs characteristics of the bread in the artisanal sales context in comparison with bread in the product-only sales context. This might make it possible to nudge people towards the purchase of whole wheat bread. Several important factors which are decisive for food choice are highlighted for the whole wheat bread and might nudge people towards the purchase of this bread.

On account of the many contributions of whole grains to health, the aim of this study is to boost the consumption of whole wheat bread. The question is whether nudging can influence bread choices in such a way that consumers' purchase of white bread will be replaced by purchase of whole wheat bread during lunch in a self-service canteen in order to enhance whole grain intake. Nudging will take place by exposing consumers to several artisanal cues, such as a baker who is kneading the whole wheat bread in the surrounding of the purchase point in the self-service restaurant. In this way, consumers are exposed to the artisanal production process. On the basis of the definition of artisanal cheese (Kupiec & Revell, 1998), we will define 'artisanal production method' in this study as

'Production in a non-industrial, traditional way, from which the product is manufactured on a small-scale with a limited degree of mechanisation'

To our knowledge, no research has been done to the effect of the visualisation of the artisanal production method on actual whole wheat bread purchase. The visualising of an artisanal way of the production of whole wheat bread is expected to nudge customers to purchase the whole wheat bread and thus contribute to consumption of lunches higher in fibres. Based on previous literature (e.g. Lennernäs et al., 1997; Imram, 1999), the expected mechanism behind this nudge consists of two parts. Firstly, a halo effect due to authenticity is expected and secondly an enhanced perceived freshness, perceived monetary value and perceived healthiness and naturalness of the product is expected. Consequently, a more positive attitude towards whole wheat bread is predicted. Besides,

research from Bakke and Vickers (2007) made clear that students from a university in the United Stated differed in their preference for whole wheat bread and white bread. A difference between the effect of nudging on white and whole wheat bread is thus possible. The expected effect will therefore be tested for both whole wheat and white bread. The main question, which will be examined by means of a field experiment, is:

Does the visualising of the artisanal bread baking process affect
the sales of both whole wheat bread and white bread?

When it becomes clear that visualizing the artisanal production is able boost sales, managers of (school) canteens can adapt their policy to contribute to healthier consumption patterns. The repeated nudged choice for whole wheat bread can ensure an enhanced appreciation of the whole wheat bread and on the long term, the consumption of this product might become routine (e.g. Furst, Connors, Bisogni, Sobal & Falk, 1996).

This thesis is divided in five chapters. This first chapter introduced the topic and clarified the central problem and the aim of this study. An overview of relevant theories and models about the human mind in relation to nudges and the decision-making process with regard to food will be given in the second chapter. Subsequently, in Chapter 3, the method which is used to find an answer on the stated hypothesises is described. In Chapter 4, the results will be described. Finally, Chapter 5 consists of the conclusion and discussion based on the results. Also recommendation will be given for practice and further research.

2. Literature background

2.1 Consumers' choice for food products

From the first studies with regard to the food choice process, it became clear that taste, health, social status and cost are important factors influencing food choice (Lewin, 1943; 1951 *in* Furst et al. 1996:247). In countries of the European Union, quality, taste, price and healthiness are the four most influential factors in food choice (Lennernäs, Fjellström, Becker, Giachetti, Schmitt, Remaut, & Kearney, 1997). Most of these attributes cannot be judged prior to consumption. Therefore, certain extrinsic cues are used as reference point to make judgments about the product. For example, for some consumers process characteristics such as organic production or natural production influence the perception about and the behaviour towards food product for an important part (Brunsø et al., 2002). Extrinsic cues can be divided in exteroceptive cues and interoceptive cues. Exteroceptive cues consist of vision, audition, and orthonasal olfaction. These cues can be judged prior to consumption. In contrast, the interoceptive cues consist of 'taste, retronasal olfaction, oral-somatosensation, and any sounds that may be associated with the mastication and consumption of the food itself' (Piqueras-Fiszman and Spence, 2015). These interoceptive cues can only be judged during and after consumption. The majority of our expectations with regard to foods and drinks are therefore based on the exteroceptive extrinsic cues. In turn, expectations affect consumers' judgments concerning the intensity of a food's sensory properties, identity, quality, satiating potential, and hedonic properties (Erngvist & Ekelund, 2014).

Furst, Connors, Bisogni, Sobal and Falk (1996) have integrated and built upon the work of others about food choice by conducting focus group interviews among middle-income Caucasian people. Their conceptual model made the general nature of the food choice process clear, and revealed the numerous factors involved. The personal system consists of value negotiations. Different personal values with regard to the food are considered, including sensory perceptions, monetary considerations, convenience, health and nutrition, managing relationships and quality. Which values are most salient depends on the specific situation and on the person himself. Sensory perceptions appear to be the most dominant value in most situations. Those perceptions, in turn, are mostly driven by taste (Furst et al., 1996; Torjusen, Lieblein, Wandel, Francis, 2001). Next to the important role of situation for the salience of a value, also beliefs about food - which changes in time - play a role. Traditional food quality aspects, such as smell and taste, are nowadays complemented by attributes such as the absence of food additives and residues, the nutritional value of the product, and the production process of the food (Torjusen et al., 2001 and Wilkins and Hillers, 1994).

Our food choices are thus formed by numerous factors. Which of the factors are important depends on the person itself, the situation and the beliefs about food. Exteroceptive cues are used to estimate to what extent the food is able to satisfy our personal values with regard to the food. But what is the reason that we value *artisanal* food products?

2.2 Consumers' choice for artisanal food products

Experience marketing

Decades ago the mass production of the industry was valued due to its possibility to produce enough (food) products at reasonable prices. Nowadays, consumers are more prosperous than about seventy-five years ago. Due to the European Union, which was endeavouring to enhance the agricultural production, sufficient and cheap nutrition became available for the entire population.

The share of income spent on food (excluding liquor and tobacco) in total expenditures, has halved (CBS, 2000). In 1938, thirty-two percent of the income was spend on nutrition, while it is only about sixteen percent of today's income (CBS, 2012).

Consumers have obtained possibilities to spend their money on other things than only the basic necessities. The economy has progressed from an economy in which goods and services are delivered to an experience economy (Gilmore & Pine, 2007). Nowadays, consumers do not only buy the product for its features, they also expect to complement it with an experience. Therefore, it is necessary to shift from a features-and-benefits approach that marketers used for years to a focus on customer experiences (Schmitt, 1999). People no longer ask themselves 'what' and 'how' to buy, but 'where' and 'when' to spend their money and their time (Gilmore & Pine, 2007). We are currently living in a consumption culture which has changed the focus from prices and functional properties to a focus on products with unique and distinctive characteristics (Schmitt, 1999). In other words, the *meaning* of consumption has won interest. What does it mean to consume a certain food product? It is not only the filling of the stomach (functional), but it is about enjoying a taste sensation (experiencing) (Schmitt, 1999). '*More than anything else, food meanings and associations represent attitudes toward the food itself, toward its sensory qualities, or toward the physical and social context in which it is served, including other individuals who serve or eat it*' (Lyman, 1989). Although consumption is associated with hedonic fulfilment and the symbolic meaning of consumption, modern products are in general too commercial to attach personal meaning to it (Liao & Ma, 2009).

Lyman (1989) made clear with his research that (dis)liking of food not only depends on the sensory properties of the food but also on the non-sensory context. '*Associations, images, thoughts, ideas and feelings related to food can function as symbols that call forth emotions, attitudes, ideas and beliefs crucial to pleasant/unpleasant associations'*. Due to associations, food can evoke memories or make us think about certain (un)related things. These meanings are ascribed to the food by consumers and guide consumer behaviour (Van den Hoogen, 2012). The meaning of the object dominates the responses towards a product (Osgood 1952; Siegel 1954). These responses are at least that important as sensory qualities (Lyman, 1989).

Nostalgia

Authentic products are able to deliver these positive associations, thought and feelings. The products represent the original product from the past. In other words, authentic products are real, original, genuine and sincere (Gilmore & Pine, 2007). Food evokes certain associations and thoughts which might be pleasant or unpleasant (Lyman, 1989). For example, industrially produced food products might be associated with the increased additives, pesticides, hormones, and antibiotics in food, which consequently increased consumers' concern (Latacz-Lohmann & Foster, 1997). Traditionally produced products are perceived as more safe, and are therefore more liked (Caporale & Monteleone, 2004; Cerjak, Karolyi, & Kovačić, 2011). Besides, association from the 'good old days' might be evoked, called nostalgia. Holbrook and Schindler (1991) described it as 'a preference (general liking, positive attitude, or favourable affect) toward objects (people, places, or things) that were more common (popular, fashionable, or widely circulated) when one was younger (in early adulthood, in adolescence, in childhood, or even before birth)' (p. 330). The focus is mainly on a romanticized memory of the past and on some positive details that are distinctive from the present. This nostalgic feeling makes most people long to the past (Holbrook, 1993).

This study

The positive effect of nostalgic feelings on peoples thought and feelings might also apply to the concept of bread being prepared in an authentic way. Consumers are expected to have more positive associations about the bread when they are exposed to the authentic production method. Next to this, the adding of an experience to the food makes the food more attractive (Gilmore & Pine, 2007). The overall attractiveness of the bread sold in an authentic ambiance is therefore expected to be higher than the same good without the authentic experience. To relate this to this study: we expect the overall attitude towards bread prepared by a passionate baker in an artisanal way to be more positive than the overall attitude towards an industrial, baked-off bread without a sales context relating to the authentic bread baking process.

2.3 Decision-making process

The human mind is the starting point of all behaviour. However, this does not mean that behaviour is never 'mindless'. As can be seen in Table 1, two cognitive systems can be distinguished. These systems are described as the implicit and explicit system (Evans & Over, 1996; Reber, 1993), but are also known under the more neutral terms 'system 1' and 'system 2' (e.g. Evans, 2003; Stanovich, 1999; Stanovich & West, 2000).

Table 1 A comparison of System 1 and System 2 thinking

System 1 (Fast, Implicit)	System 2 (Slow, Explicit)
Automatic	Controlled mental process
Unconscious	Deliberate and Conscious
Effortless	Effortful
Based on associations	Based on logical thinking and analysis
Heuristics (rules of thumb)	
WITHOUT self-awareness or control	WITH self-awareness or control

System 1 predominates most of the time, which means that we behave in an automatic way. Most behaviour is instinctive and is innately programmed (Evans, 2003). System 1 continuously transmits suggestions to system 2, such as impressions and feelings. System 2 only takes effort and only provides more detailed and specific processing when system 1 cannot offer an answer to the problem that arises at a certain moment. Therefore, system 2 allows for hypothetical thinking as opposed to system 1. In short, most of human behaviour is unconsciously because system 2 is only active when necessary.

As became clear in Chapter 2.1, numerous attributes are involved in the decision-making process of food (Lennernäs et al., 1997). However, it are not the product attributes themselves that are relevant, but they are relevant to the extent that these attributes are able to contribute to the fulfilling of desired consequences and thereby to the attainment of personal values (Grunert, 1995). The attributes function as cues for inference making. Consumers make inferences to decide what the

optimal choice is for them. However, it is not advantageous to consider every choice deliberately. Consumers are able to reach a quick decision, by making use of the fast affective implicit system: system 1 (e.g. Evans, 2003; Evans, 2008). In contrast with the extensive value negotiation process in system 2, strategies that are used by system 1 are more routine. The strategies become heuristics (Furst et al., 1996): similar patterns and rules for making food selections are used. This allows consumers to make fast decisions. Available information is gathered and the consumer consequently comes up with a choice which is most satisfying in that specific situation. These heuristics emanate from previous value negotiations (Furst et al., 1996). Making use of these heuristics of system 1 to guide behaviour is called nudging. This will be discussed in the next chapter.

The reason that system 1 can function fast is due to the associations it has learned between ideas (Dijksterhuis & Bargh, 2001; Evans 2003). These associations form a network, which consists of information placed into so-called nodes. Every node represents a meaning concept. Associative links connect these nodes. Information that is related in some way is merged together under a more abstract category. When combining two or more individual nodes together, a proposition (also called a set of beliefs) is formed. A more complex meaning is hereby created. For example, Raghunathan, Naylor & Hoyer (2006) showed that consumers have the proposition (set of belief) that 'unhealthy' food items are more tasty (also called unhealthy = tasty intuition). People differ in the meaning they assign to the stimuli they perceive. This can be explained by the fact that people perceive more than actually is present, because trait inferences are made (Dijksterhuis & Bargh, 2001). Inference making happens spontaneously, unconsciously and constantly (Higgins, 1989). Even when people experience the same sensory stimuli, the interpretation may be completely different. Consequently, people might perceive the same (food) products differently.

One level of complexity higher in the associative network, propositions are merged into *schemas*. These are cognitive frameworks which are developed through experience. These schemas are decisive for the meaning people assign to stimuli. The associative network is therefore a network of beliefs based on experiences built up in life. Cues in the environment create expectations with regard to the food (Piqueras-Fiszman and Spence, 2015). The experienced and stored information is integrated with the currently available cues. For example, visual appearance and orthonasal olfactory cues are integrated with experiences in the past and form powerful expectations about what is going to be experienced (Spence and Piqueras-Fiszman, 2014; Woods et al., 2010). When a product should be positioned in a certain category in the human mind, cues should be provided that facilitate its placement in that specific category.

Sensory cues, such as visible, olfactory or environmental cues, can function as a product signal. It helps consumers to make judgments about the product: the hidden dimensions (such as taste) are inferred by attributes that can be observed (such as colour). The observable attributes thus evoke certain associations from which conclusions about the hidden dimensions are drawn. This short-cut that people make is called a heuristic: a mental rules-of-thumb which allows fast decision making. For instance, people might use a high price as cue to conclude that the quality of the product must be high as well (Dodds, Monroe & Grewal, 1991; Rao & Monroe, 1989). Especially in situations where there is a) limited time, b) low risk and c) low involvement, people fall back on these cognitive short cuts. Despite the benefits of this way of decision-making, there is also a downside. Errors arise easily when making use of heuristics. Heuristics (the inferences) might be inappropriate or inaccurate, which consequently might result in a bias in perception. So, the sensitivity for biases in decision-

making depends on the system consumers use. People who often engage in careful, deliberative processing are less vulnerable for biases. Roe et al. (1999) described among others the bias called 'halo effect': positive perceptions of a specific product attribute are generalized to other product attributes. An example is provided by the study of Schuldt and Schwartz (2010), which showed that consumers estimated the amount of calories from cookies that were described as organic lower than the same cookies, but without this description.

To conclude, decisions are based on routine and heuristics most of the time. Interventions that make use of the characteristics of system 1, by adapting the environment to guide behaviour, is called nudging.

2.4 Nudging: Insight into automatic decision-making processes to influence consumer behaviour

Knowledge about the decision-making process will be used in this study to nudge consumers to a certain choice. The environment influences decision making (e.g. van Kleef, Vrijhof, Polet, Vingerhoeds, & de Wijk, 2014; Thaler & Sunstein, 2008), often without people being aware of it. In popular marketing, Tiggelaar (2008) is well known for his statements with regard to human behaviour. He combined research of renowned psychologists, such as Bargh and Baumeister, and consequently states that about 95% of human behaviour is unconsciously or automatic and is triggered by our surroundings. This implies that for lasting change, interventions will be the most effective if these focus on affecting unconscious behaviour instead of conscious, planned behaviour. Bargh and Chartrand state that 'most of a person's everyday life is determined not by their conscious intentions and deliberate choices, but by mental processes that are put into motion by features of the environment and that operate outside of conscious awareness and guidance' (Bargh and Chartrand *in* Uhlmann et al. 2008:294)

Nudging is a relative modern type of intervention which adapts the decision-making environment in such a way that people are inclined to make the 'best' choice (Thaler & Sunstein, 2008). However, people have still freedom of choice and are not forced. A successful example in which the environment is adapted to nudge students toward healthier choices in the lunchroom is the study of Hanks, Just, Smith and Wansink (2012). Healthier foods were made more convenient relative to the less healthy food by means of a convenience line which only allowed food products in this line that belonged to the healthier food options. Food that belonged to the unhealthy food options were available in the standard line. Consequently, unhealthy food were indeed less consumed.

The cognitive bias in inference making when positive perceptions are generalized to other product attributes (called 'halo effect') is expected to be evoked in this study. When consumers pass by in the self-service restaurant, they are exposed to several extrinsic cues. These extrinsic cues will include a person in baker clothes who is kneading dough, a sack of flour, and cereal grains. Associations will be made on the basis of the extrinsic cues with regard to the authentic production-process. These observable attributes are expected to influence consumers' associations assigned to the bread.

The propositions (set of beliefs) which are in people's mind are decisive for the inferences people make. The question is which associations people make when seeing the visible cue of an artisanal production method. The study of Kupiec and Revell (1998) clarified that presenting cheese as a product with a 'non-industrial' origin, the product is associated with a distinctive character and

superiority. On the basis of their study and the previously mentioned studies about inference making, we expect that bread which is presented in a context of artisanal cues is seen as more artisanal bread than bread presented in an ordinary context. Bread presented in an artisanal sales context is assumed to be more appealing. Therefore, we hypothesize:

H_{1a} *Compared to consumers exposed to a 'product-only' sales context, consumers exposed to an artisanal sales context are more likely to purchase the displayed bread*

H_{1b} *The effect of the visualisation of the artisanal production process on purchase is expected to be stronger for white bread exposed in an artisanal sales context than for whole grain bread exposed in an artisanal sales context*

2.5 Visualising the artisanal production process to nudge consumers

In this section, the expected mechanism behind the effect of an artisanal sales context on purchase behaviour will be deliberated. As can be read in Chapter 2.1, consumers value attributes such as quality, price and healthiness (Lennernäs et al., 1997). The reasons for our expectation that artisanal cues on place of purchase are able to influence these purchase motives of consumers positively, will be explained in this Chapter. Each section will end with a related hypothesis, where subsequently the conceptual model is based on. However, only hypotheses H_{1a} and H_{1b} will be tested in the present study. Hypotheses two up to and including six should be tested in further research.

2.5.1 Authenticity

Positive feelings due to authenticity

Local produced products, organic produced products and fair trade products have increased in popularity (Autio et al., 2013; Fernqvist & Ekelund, 2014). These products have in common that they are authentic: the product contains qualities of genuineness, truth, reality, and traditionalism (Liao & Ma, 2009; Grayson & Martinec, 2004; Rose & Wood, 2005). Nostalgia is the 'bittersweet emotion where we view the past with both sadness and longing' (Holak & Havlena, 1998). It refers to the good old days and call up good memories. Consumers have nostalgia for the past. This feeling can be satisfied by authentic characteristics of a product. Numerous brands advertise their products in a way that evoke nostalgic feelings, to show the relationship between the advertised product and the good old days. Authenticity is thus used as a brand-positing strategy and a product appeal (Grayson & Martinec, 2004; Penaloza, 2000). People buy these authentic products for cherishing memories (Liao & Ma, 2009), because food can evoke memories or make us think about related things. Concluding from the wide use of the term 'artisanal' in marketing, it can be assumed that authenticity evokes positive associations and subsequently influences sales.

Defining authenticity

Authenticity can be characterised by six properties: originality, quality commitment and credibility, heritage and style persistence, scarceness, sacredness, and purity (Liao and Ma, 2009). Originality is the main property of authenticity and reflects a product with unique features. Products made by a hand-crafted process, such as in this study, are examples of original products. Quality commitment and credibility, then, reflect the guaranties for quality. The next properties of authenticity, heritage and style persistence, are the heritable spirits and characteristics and the consistency with the features that are in peoples memory. Authenticity means also scarceness: a property that is hard to

achieve. More cost or effort is needed to obtain an authentic product due to the wish to have a product of restricted supply. Authentic products may have a sanctified position, since the product relates to memories from the past or to something that consumers are interested or highly involved in. Finally, purity is a property of an authentic product due to consumers view that 'authentic products come from only one source, are focused on and proficient in one thing only, are not alloys, and are not produced by mixing several materials' (Liao & Ma, 2009). A product does not necessarily need *all* of these characteristics to be an authentic product (Liao & Ma, 2009).

The perceived characteristics of authenticity are the basis of the subjective judgments on the authentic value of the products, which are made by consumers to satisfy their need for authenticity (McNamara, 1997). Need for authenticity is defined as 'a kind of psychological urge or force that directs consumers to seek and consume authentic products as a means of exhibiting their true self, actualizing their ideal self, and minimizing the gap between the two' (Liao & Ma, 2009). Consumers differ in their need for authenticity. People with a high need for authenticity buy authentic products deliberately to assure themselves of the high quality of a product. This enables them 'to meet their desire to be quality people living quality lives'. Therefore, they are willing to spend more money and time on authentic products. In contrast, participants in Liao and Ma's study (2009) with a low need for authenticity based their purchase solely on price.

Halo effect

The presence of a certain quality might give the observer of that quality aspect the idea that other qualities are also present. In other words, positive perceptions are transferred to other (un)related attributes. This phenomenon is known as 'halo-effect'. In this study, consumers are exposed to several extrinsic cues when they pass by in the self-service restaurant. Cues with regard to authenticity will include for instance a person in baker clothes who is engaged in the bread baking process, cereal grains and a sack of flour. Associations will be made (un)consciously on the basis of the observable cues, which consequently influence the evaluation of the bread. Since we expect associations with regard to the authentic bread baking process to be positive, these positive associations might be transferred to other attributes, such as quality and healthiness.

Especially for consumers in routine buying situations, the halo effect is more likely to occur since they are less involved in the decision-making process (Park, Iyer, & Smith, 1989) and therefore have minimum information search and deliberation in decision-making (Beharrell and Denison, 1995; Brucks et al., 1984; Silayoi and Speece, 2004). Gender, BMI, and dietary restraint does not influence the sensitivity for the halo effect (Lee, Shimizu, Kniffin and Wansink, 2003). So, it is the automatic processing of information (system 1) based on heuristics that causes the halo effect.

Appearance plays a role in consumers' perception and acceptance of a food product (Imram, 1999), especially when food is sold without a package (e.g. in a restaurant). An attractive appearance can have a halo effect on food acceptability (Imram, 1999). Since authenticity evokes positive feelings in general, a similar halo effect is expected to occur for authenticity. The positive feelings evoked by the authentic appearance are expected to be transferred to other attributes of the authentic product, and consequently to enhance the liking of the product. For example, the positive feeling due to the authentic ambiance and production method might be transferred to other attributes such as the

perceived quality or perceived healthiness. How these characteristics are *an sich* important in the purchase process, will be discussed in the next sections.

H_2 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to associate the bread with authenticity to a greater extent

2.5.2 Quality (perception)

Quality is one of the top four values influencing food choice for inhabitants of European Union countries (Lennernäs et al., 1997) and it is influenced by four major dimensions: taste and appearance, health, convenience, and process (Grunert, Larsen, Madsen & Baadsgaard, 1996). It is an abstract, comprehensive concept and therefore difficult to define. The International Organisation of Standardisation (1992) describes quality as representing 'the totality of features and characteristics of a product that bear on its ability to satisfy stated or implied needs'. So, quality is not an aim in itself. Consumers seek for quality because it contributes to satisfy purchase motives or values (Frewer & Van Trijp, 2006). However, agreement lacks on what should be included in the definition of food quality (Acebrón & Dopico, 2000; Lawless, 1995). An important note to make is that a food product does not possess quality *an sich* (Luning & Marcelis, 2009). In other words, quality is not an inherent characteristic of the food (Issanchou, 1996). It are the properties a food product consists of (such as concentration of whole wheat) that influences product attributes (such as taste). Consequently, the properties are perceived and judged as quality after consumption.

However, in some situations (e.g. a self-service restaurant), consumers must necessarily make an estimation of the quality *before* consumption. The a priori quality perceptions of a product, which are made before purchase and consumption, are called quality expectations (Kupiec & Revell, 1998). Quality is inferred from experience and extrinsic and intrinsic quality cues, the so-called informational stimuli. Cues are pieces of information which offer indirect information about quality attributes. Extrinsic quality cues are the '*characteristics that are related to the product, but are not physically part of it*' (Olson, as cited in Acebron & Dopico, 2000), such as appearance, price, packaging and presentation. In contrast, intrinsic quality cues are the '*characteristics that are part of the physical product, which cannot be changed without also changing the physical product itself*' (Olson and Olson & Jacoby, as cited in Acebron & Dopico, 2000). For example, stamp of quality and production information (Steenkamp, 1989; Issanchou, 1996). Brunsø, Fjord, Grunert (2002) stated that the values consumers want to satisfy influence which quality dimensions are sought, perceived and evaluated. Only those cues that are perceived influence expected quality.

The perceived quality cues are the basis of beliefs about quality attributes of the product, because quality attributes cannot be judged before consumption. Quality perception is a process in which product features are collected and categorized (Gellynck, Kühne, Van Bockstaele, Van de Walle, and Dewettinck, 2009). Van Trijp (1994) found that besides physical features of the product, communication around the product, or a combination of these two, are the basis of consumer *perceptions* of product quality. The quality as perceived by consumers is also called subjective quality (Frewer, Van Trijp, 2006). Objective quality is the type of quality in which the physical characteristics built into the product is denoted. To promote a product, it is important that consumer wishes are translated into physical product attributes and that consumers can infer the desired qualities. Finally, the overall quality evaluation is formed out of the perceived quality attributes of the product

(Gellynck, 2009; Steenkamp, 1989). Briefly, cues influence overall quality evaluation via quality attributes.

In the present study, the artisanal sales context is expected to be associated with quality since the study of Steenkamp & Van Trijp (1996) with regard to beef made clear that perceived freshness and attractiveness of appearance increases the expected quality. Freshness is a holistic attribute which describes how recently the food product is produced or harvested and to what extent it has been preserved (Heenan, Hamid, Dufour, Harvey, and Delahunty, 2009). In the present study, consumers can see that the baker is kneading dough, which gives the impression that the bread is fresh. Consequently, consumers might make the inference that the bread is fresh and thus of good quality. Freshness is an essential factor in consumer acceptability and choice of bread (Heenan, Dufour, Hamid, Harvey & Delahunty, 2008; Lambert, Le-Bail, Zuniga, Van-Haesendonck, Van-Zeveren et al., 2009). However, the perception of the freshness differs per person. For example, with regard to the odour of bread, some consumers indicate a 'floury' odour as positive driver of bread freshness, while others indicate a 'malty' or 'toasted' odour as positive driver (Heenan, Dufour, Hamid, Harvey, and Delahunty, 2008). It is a complex process involving interactions of sensory sensations attributed to the appearance, odour, taste, flavour and oral texture of the product (Heenan, Dufour, Hamid, Harvey, & Delahunty, 2008). From these sensory sensations, only appearance and odour can be experienced *prior* to consumption.

The importance of intrinsic and extrinsic cues for the perceived quality is proven by Zeithaml (1988), who showed that the available cues in the place where the purchase is made influence perceived quality. Both extrinsic and intrinsic cues matter. Later on, Steenkamp (1989) proved this specifically for food products. Study of Bredahl, Grunert and Fertin (1998) on quality perception of pork showed a very strong relationship between the perceived quality cues (the visual appearance) and the expected quality (r = .95). Apparently, cues such as colour and intramuscular fat are taken into account by consumers when making an estimation of the quality. In this study, visual information is given about the production method which is used to make the product. This covers the process-oriented quality. Examples of this type of quality are organic production and production without pesticides. Last years, more importance is attached to the way a product is produced and it has become a factor that influences quality (Brunsø, Fjord, Grunert, 2002). In this study, the artisanal production method will be highlighted to influence the quality perception in a positive way.

Visible information provides cues for consumers to make inferences prior to consumption and thus to make an estimation of the quality of the product. Therefore, we expect to increase consumers' quality perception of the whole wheat bread by exposing them to several artisanal cues. When consumers are exposed to the bread baking process, they are expected to assign positive associations such as 'freshness' and 'prepared with care' to the whole wheat bread. Therefore, it is expected that the visualisation of the artisanal production method improves the perception of the freshness and thus the quality of the bread better in comparison with the perception of bread which is displayed in a simple and sober way.

H_3 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to associate the bread with freshness to a greater extent

H_6 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to perceive a higher quality of the bread

2.5.3 Willingness to pay

Value for money

Price is also an important factor in the consideration whether or not to choose a product (Lennernäs et al., 1997; Furst et al. 1996). Intention to buy is determined by a trade-off between the negative side (e.g. giving money) and the positive side of the deal (e.g. getting a product or service in return which is expected to fulfill the purchase motive), where the value of the product should outweigh the costs. The value of the get-side is based on the subjective quality of the product perceived by consumers (Brunsø, Fjord, Grunert, 2002). The subjective perceived quality determines therefore the height of the willingness to pay. Improvements in the objective quality of the product influences the value of the product therefore only when these adaptations influence the perceived quality (Brunsø, Fjord, Grunert, 2002; Grunert 2005). Adding value is thus a customer-oriented concept. Though, what is valued differs among people and among situations.

The value of a product from the perspective of consumers can be described as willingness to pay (WTP). Results of the study of Lee, Shimizu, Kniffin, and Wansink (2013) showed that food products that were labelled as 'organic' are valued higher than products that were labelled as 'regular', although they were identical and organically produced. The WTP increased with about twenty-one percent when the product was labelled as 'organic'. Previous research obtained similar results: WTP increased with five until ten percent. These results show that written information about the production method can influence the value of the product. We expect that this effect also applies to visual information about the production method.

This study examined whether the artisanal production method leads to differences in valuation of bread. The visualization of the artisanal production method is used as food-related information. Given that prices are equal, consumers are expected to choose for the artisanal produced product since the perceived value of the bread in an artisanal sales context might be higher. Consequently, consumers perceive that they get better value in return for their money and in this way satisfy their needs the best.

Feelings of sympathy and reciprocity

Sympathy and reciprocity are also factors that might affect consumers' purchase decision. According to Cialdini (1984), most people feel obliged to return a favor when they receive something. Reason for this is the uncomfortable feeling that arises when we are indebted to someone else. For example, guests who got an unexpected gift in the form of candy when delivering the check of the dinner tipped more than did customers who received no candy (Strohmetz, Rind, Fisher & Lynn, 2002). This is one of the studies which demonstrate that people often feel obligated to return a favour, even if the generous act was not requested.

In this study, the natural feeling of reciprocity can be evoked by exposing visitors to the baker who is engaged in the bread baking process. Consumers are exposed to a baker who is working hard and passionately to prepare a tasty bread for them. The baker spends his time and energy on the bread. A feeling of sympathy for the baker might arise by the consumer. Besides, people might feel obliged to give something in return for the work that examined by the baker. The bread is made handcrafted which makes the bread more unique than bread from an industrial baking process where less time

and energy is spend on. Consequently, these feelings might lead to a heightened willingness to pay for the bread. According to Cialdini's theory (1984), it will feel natural to pay the baker for the hard work he has examined. Due to the hard and passionate work of the baker, the value of the product is expected to be higher than that of bread from the industry.

H_4 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to have a higher willingness to pay and therefore see the product as more worth the money than a product from the product-only sales context

2.5.4 Health and naturalness perception

Positive associations which are expected to be evoked due to the authentic sales context include associations with regard to naturalness and healthiness. Naturalness and healthiness are important food motives (e.g. Bech-Larsen, 2001; Bech-Larsen & Grunert, 1998; Nielsen, Sørensen & Grunert, 1997). However, the importance assigned to healthiness and naturalness differs among consumers: Traditional consumers were found to value 'health concern' and 'naturalness' higher when making a food choice than hedonistic consumers did (Pohjanheimo, Paasovaara, Luomala, & Sandell, 2010).

Healthiness is a very broad concept which can be viewed from different perspectives. In this study, healthiness is seen from a consumer perspective. Health is a quality dimension (Brunsø, Fjord, Grunert, 2002), which has become as important as taste nowadays according to a number of studies. Consumers expect to attain a longer life and a life that is higher in quality (Roininen, Tuorila, Zandstra, de Graaf & Vehkalahti, 2001). In the eye of consumers, nutrition is an important contributor of health (Brunsø, Fjord, Grunert, 2002). Healthiness can be attained by consumption of healthy food as well as avoiding unhealthy food. Healthy food is related to nutritional aspects such as functional and less fatty foods, while the avoidance of unhealthy food has to do with food safety. Food safety is defined as 'the probability of not suffering some hazard from consuming the food in question' (Brunsø, Fjord, Grunert, 2002). Consumer concern with regard to various additives, pesticides, hormones, and antibiotics has increased (Latacz-Lohmann & Foster, 1997). Labels including information about the production method influences the liking of the food. For instance, labels of genetically modified food decreased liking in comparison to the same food that was unlabelled or labelled as being traditionally produced (Caporale & Monteleone, 2004; Cerjak, Karolyi, & Kovačić, 2011). From this study we can conclude that production process affects the perception of healthiness and thus liking.

Health is not directly perceivable for the consumer; it can only be inferred from concrete intrinsic and extrinsic cues. Healthiness is a credence attribute (Brunsø, Fjord, Grunert, 2002), which implies that healthiness is not visible and cannot be validated by the consumer before or after consumption (Andersen, 1994). The consequences for one's health is a matter of trust and credibility. In consumers' mind, concrete product attributes and other cues are linked to perceived healthiness. Healthiness is typically inferred from cues as naturalness, a low degree of processing, and a low fat content (Brunsø, Fjord, Grunert, 2002). Poulsen and Juhl (1999) examined consumers´ reasons for and against choosing a fresh, gutted plaice as the main ingredient for a home-prepared evening meal. Questions about the perception of fish, showed that attributes such as unprocessed, naturalness, containing vitamins and minerals and low-fat are seen as contributors to wholesomeness and physical well-being (Nielsen, Sørensen & Grunert, 1997; Valette-Florence, Sirieix, Grunert & Nielsen, 2000). This, in turn, contributes to higher life values, such as a good health

and a longer life. This relationship between health and basic life values and purchase motives appeared to be strong (Brunsø, Fjord, Grunert, 2002).

Roe et al. (1999) clarified which inferences consumers make when they are exposed to nutrition and health claims. 'When a product featured a disease risk reduction claim in conjunction with a nutrient content claim or only a nutrient content claim, consumers perceived the product as healthier in terms of health associations'. In other words, a health halo arose which caused inference-making in such a way that one attribute that was evaluated positively lead to positive inference making of other attributes as well. In the specific case of bread, providing information about the content is not only necessary to make an estimation of the healthiness, it also increases the liking and perception regarding the healthiness and nutritional value (Mialon et al., 2002). Also consumers' estimation about the amount of calories a product consists of can be influenced by a label telling the consumers the product is 'organic'. Lee, Shimizu, Kniffin and Wansink (2003) found that consumers estimated about 22% fewer calories for 'organic' yoghurt, 'organic' potato chips and 'organic' cookies than the 'regular' labelled yoghurt, chips and cookies, while the products were identical and both organically produced. Even more important, the labels evoked a more nutritious perception of the products than the non-organic counterparts. In general, the 'organic' products were rated to be lower in calories and fat. Besides, the fibers and nutritional evaluations (e.g. tastes lower in fat) were rated higher. So, the food product with a label mentioning that the product was organically produced was evaluated more healthful than the conventional produced food product. These studies thus demonstrate the generalising effect of information about the production method. The increase in the sales of organic foods shows the increased interest in true and fair products (Autio et al., 2013). Therefore, we expect a traditional production process to evoke the same positive associations and thoughts.

H_5 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to associate the bread with naturalness and health to a greater extent

2.6 Summary and hypothesis

Nowadays, food is sufficiently available due to the changes in food production. Meanwhile, authentic produced food appears to attract consumers. Explaining factors might be the positive nostalgic feelings that these products evoke and the experience that is complementary to the ordinary purchase process. On the basis of these positive aspects of artisanal produced food, we expect bread offered in an authentic sales context to be more appealing than bread offered in a product-only sales context. Besides, we know that cues in the purchase environment create expectations with regard to the food (Piqueras-Fiszman and Spence, 2015). Therefore, authentic cues will be offered since these are expected to evoke positive inferences. In this way, a strategy is set up to nudge consumers to whole wheat bread while still maintaining freedom to make other choices.

The assumed mechanism behind the effect of an artisanal sales context on purchase behavior consists of four aspects: authenticity, quality perception, willingness to pay, and naturalness and healthiness perception. Authentic products *an sich* are able to cherish memories since the food can evoke memories and make us think about related things (Liao & Ma, 2009). Next to this, the authentic sales context is expected to evoke a 'halo effect': positive perceptions due to the authentic sales context are generalized to other product attributes such as quality and healthiness. The sales context is also expected to offer cues for evoking positive inferences with regard to quality.

Perceived freshness and attractiveness of appearances increase the expected quality (Steenkamp & Van Trijp, 1996). Since the bread is baked on spot, we expect this to positively influence freshness perception and thus quality perception. Also an artisanal sales context is expected to be more attractive than a product-only sales context. With regard to the value of the product, the willingness to pay is expected to be higher due to the reciprocity principle (Cialdini, 1984). Consumers are exposed to the time and energy the baker spends on their bread and they might therefore feel obliged to return a favor. Also the value perception might increase due to the increased subjective quality. In total, this might make the value perception higher in comparison with industrial baked bread. Finally, from the studies of Caporale and Monteleone (2004) and Cerjak, Karolyi, & Kovačić (2011) can be concluded that production process affects the perception of healthiness and consequently liking of the product. Besides, consumers see the ingredients used for bread baking on the display. This might increase the perception of naturalness. To conclude, an artisanal sales context is expected to nudge consumers' purchases in the direction of bread on the artisanal display. This knowledge could be deployed in order to stimulate whole wheat purchases and thus whole wheat consumption.

Based on the preceding review of the literature, hypothesises are made. The hypothesises are repeated in this Chapter, to clarify the relationships. There should be mentioned that not all hypothesis will be tested in this study. Hypothesis 2 until 6 are assumptions about the underlying mechanism with regard to the effect of the visualisation of the artisanal production method on bread and will be studied in a follow-up study. Hypothesis 1a and 1b cover the expectations with regard to the results of this field study.

H_{1a} *Compared to consumers exposed to a 'product-only' sales context, consumers exposed to an artisanal sales context are more likely to purchase the displayed bread*

H_{1b} *The effect of the visualisation of the artisanal production process on purchase is expected to be stronger for white bread exposed in an artisanal sales context than for whole grain bread exposed in an artisanal sales context*

H_2 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to associate the bread with authenticity to a greater extent

H_3 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to associate the bread with freshness to a greater extent

H_4 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to have a higher willingness to pay and therefore see the product as more worth the money than a product from the product-only sales context

H_5 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to associate the bread with naturalness and health to a greater extent

H_6 Compared to consumers exposed to a 'products-only' sales context, consumers exposed to an artisanal sales context are expected to perceive a higher quality of the bread

These hypotheses lead to the conceptual model as presented in Figure 1.

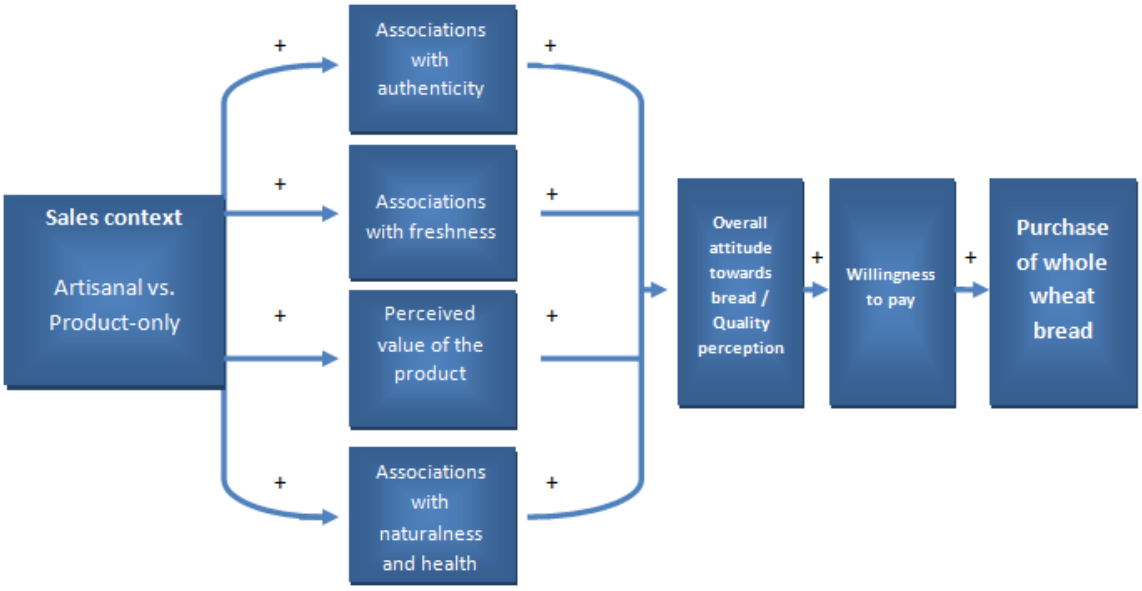

Figure 1 Conceptual model based on The Food Choice Model of Furst et al. (1996)

3. Method

This research is set up to answer the question 'To what extent affects the visualising of the artisanal production method the purchases of whole wheat bread and white bread?'. Therefore, a field experiment was set up which found place at the Hospitality Business school The Hague in Amsterdam (The Netherlands). The field study was manipulated on two factors: sales context and type of bread displayed at the experimental position (see Table 2).

Table 2 Experimental design

		Sales context	
		Product-only	**Artisanal** Passionate baker with professional bakers clothes, engaged in the bread baking process, and surrounded with artisanal attributes
Type of bread presented at the experimental position	**Whole wheat**	*Condition A*	*Condition C*
	White	*Condition B*	*Condition D*

3.1 Study design

A quasi-experimental design was set up for this research, in which two factors were manipulated. First, guests of the restaurant were either exposed to a neutral-looking employee who was not engaged in the bread baking process (product-only sales context; see Figure 2) or to a baker who was passionately engaged in the bread baking process and was surrounded with artisanal attributes (artisanal sales context). Their outfit consists of a white suit including an apron and white hat for hygiene and an artisanal baker suit, respectively (see Figure 3).

Conditions A and B: Product-only sales context **Conditions C and D**: Artisanal sales context

Figure 2 Sales context of Position 1

Employee

Authentic baker

Figure 3 Employee and authentic baker

Secondly, we varied whether whole wheat bread or white bread was presented on the experimental position of the bread corner. This leads to a two-by-two design, as can be seen in Table 2. Since research from Bakke and Vickers (2007) made clear that preference for whole wheat and white bread differs among the students in their study, it is possible that the effect of nudging on purchases of white and whole wheat bread differs. Due to this two-by-two design, the expected effect of an artisanal sales context on bread purchases can be tested for both whole wheat and white bread.

On the non-experimental position (Position 2, see Figure 4), white, brown and other types of bread such as croissants and chocolate rolls were offered during the four weeks of research. The sales context of this side was ordinary and conventional during week 3 and 4. During week 1 and 2, some vegetables were laid down as decoration according to the La Place concept. On the experimental side (Position 1), the sales context and the type of bread that was distributed depended on the condition that was tested. Due to practical reasons, also warm savory snacks - such as sausage rolls and savory pies - were displayed on a small part of the experimental position.

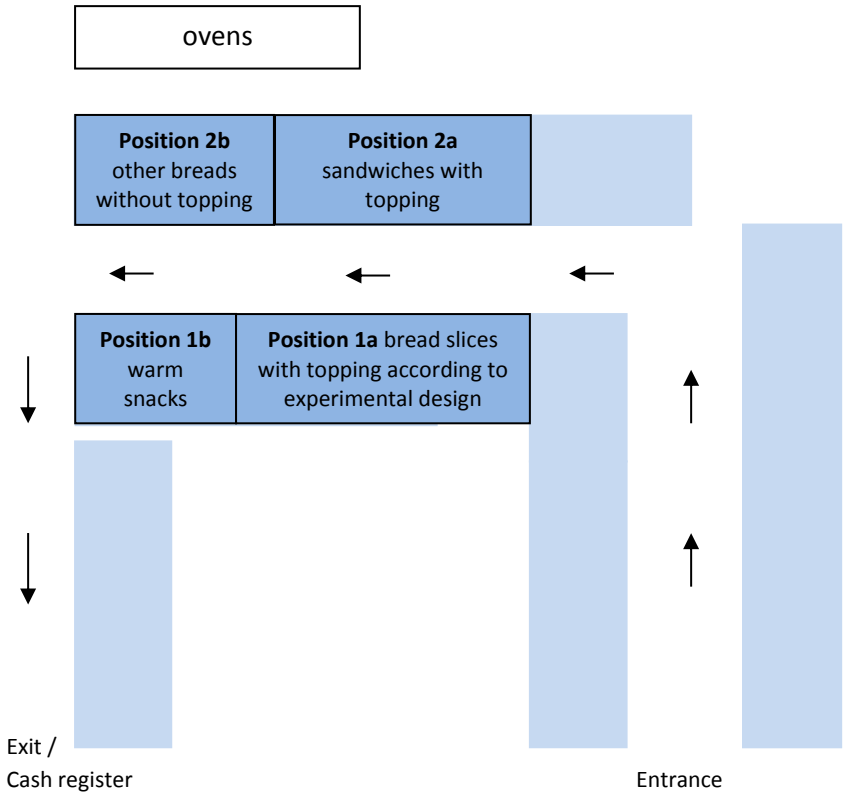

Figure 4 Simplified map of self-service restaurant Hotelschool Amsterdam

Condition A, day 2, 3, 4 and 9

On these days, the control condition for whole wheat bread was examined (see also Appendix I). At Position 1, a student who held the position as an employee of the restaurant was assisting other employees. Whole wheat bread slices were on the display, while at Position 2 brown, white and other bread rolls[1] were on the display.

Condition B, day 5, 6 and 7

On these days, the control condition for white bread was examined. At Position 1, a student who held the position as an employee of the restaurant was assisting other employees. White bread slices were on the display, while at Position 2 brown, white and other bread rolls were on the display.

Condition C, day 10, 11, 12, 13, 15 and 17

On these days, the effect of the authentic ambiance on the purchase of whole wheat bread slices was examined. At Position 1, a baker was engaged in the bread baking process and the display was dressed up with authentic attributes. At Position 2, brown, white, and other bread rolls were sold.

Condition D, day 14 and 16

On these days, the effect of the authentic ambiance on the purchase of white bread slices was examined. At Position 1, a baker was engaged in the bread baking process and the display was dressed up with authentic attributes. At Position 2, brown, white, and other bread rolls were sold.

[1] Other bread rolls include alternately focaccia bread, wraps, pistolets, bagels and chocolate rolls.

Day 1 and 8 of the study were excluded due to deviating circumstances. On both days, the toppings on the bread rolls differed from the toppings on the slices of bread. Due to incorrect deliveries, the number of days on which whole wheat bread and days on which white bread is presented is unequal.

Product-only sales context

On the days the neutral clothed employee stood behind the display on Position 1 (Condition A and B), the sales context was in an ordinary way. In order to create a standard, sober ambiance, bread slices were offered without further attributes in the surrounding (see Figure 2). The employee was not engaged in the bread baking process. The same instructions for the presentation of the bread were applicable to Position 2 during all days of the research. However, in week 1 and 2, some vegetables were laid down as decoration according to the concept the customers of the self-service restaurant were used to prior to the study.

Artisanal sales context

To distinguish the experimental sales context from the context the visitors were used to, and to evoke artisanal associations, attributes were displayed around the bread corner on Position 1. First, cues were used that visualize the artisanal bread baking process. The most important cue was an actor in the role of an authentic passionate baker, wearing a baker suit (see Figure 3). He was kneading dough on the spot during the lunch hours of the self-service restaurant.

With regard to materials that are needed for the bread baking process, a marble workbench, a baking tray, loaf tins, a rolling pin and old-fashioned scales were used as cues for the artisanal bread baking process. Furthermore, ingredients were displayed that were necessary for the bread baking process. These were a sack of flour, wheat, wheat grains, a bucket of water and yeast. Further attributes that contributed to an artisanal ambiance were a poster in the background on which the artisanal bread baking process was visualized, a red-white checkered tablecloth, a bread bin, old-fashioned stock tins and three little blackboards on which the type of topping was written down in an old-fashioned handwriting. The bread was presented in coarse cuts bread (including one of the three types of topping of that day; see Figure 4), since it is not possible to bake whole wheat bread rolls.

Figure 4 Bread on Position 1a was presented in course cuts bread

3.2 Setting and context

The self-service restaurant of the Hotelschool, which is equipped according to the La Place concept[2], serves about 440 customers during lunch on average. Data about the purchases of the customers were collected from the 23rd of February until 23rd of March, from Mondays until Thursdays (and one Friday as exception). Guests of the self-service restaurant, which were mainly students, were welcome for lunch on weekdays from 11.30 a.m. until 14.00 p.m.. Every day a choice can be made between several warm and cold dishes, such as salads and pizzas. With regard to available bread with topping, there always was a choice between a meat, fish and vegetarian alternative during the research. The offered toppings differed approximately every two days (see Appendix I). Prices of the filled sandwiches ranged from € 3.20 to € 4.00. Students got a discount of 50% on the price of every product. The bread was baked or baked off by bakers from the Hotelschool in cooperation with a few students who were scheduled for that week. Students stood behind the bread display during lunch to respond to questions of customers and to refill the display.

3.3 Procedure

Customers entered the self-service restaurant and first passed-by the displays on which nothing was changed. Several meals and pastries, such as salads, pastas and pies were offered. When walking further, bread was offered on their left and right side (see Figure 4). The displays on the right side looked always the same, while it depended on the condition that was tested what the displays on the left side looked like (see Table 2 and Figure 2). From 11.30 a.m. until 01.00 p.m., one or two observers noted down the choices the customer of the self-service restaurant made with regard to bread. Gathering data stopped at 01.00 p.m. since the vast majority of the purchases took place between 11.30 and 01.00 p.m.. Besides, this prevented empty displays or incomplete choices. However, on day 4 and 6 of the study we had to stop at 12.45 p.m. and on day 13 on 12.30 p.m., due to a type of bread that was sold out at that moment. Students working at the bread corner were asked to fill out a logbook in which the starting number of breads, leftovers and refills were noted down. Furthermore, they got instructions to refill the display continuously, to reassure that the choices for customers were equal during lunch.

3.4 Measures

Every Monday until Thursday, between 11.30 a.m. until 01.00 p.m., measures were taken[3]. The main measure was the daily relative share of whole wheat slices of bread or white slices of bread from the total number of sold bread with topping (slices of bread plus bread rolls). To realise this, the total sold number of slices of bread with topping on Position 1a and the total number of bread rolls with topping on Position 2a were measured.

Measurements were taken by means of observation. Besides, an extra check was obtained by cash register sales data. In addition, also notes of the restaurant employees about the starting number, replenished quantities and final number of bread were gathered to double check the observational data.

[2] The La Place concept implies the preparing of 100% natural, daily fresh and homemade meals prepared and presented by employees. The assortment includes among others warm meals, salads, bread rolls, coffee, fresh juices and smoothies. (https://www.laplace.com/en/, n.d.)

[3] An exception is week 4 of the study. An open day was planned on the Hotelschool on Thursday, which required changes of the lunchroom in such a way that is was unrepresentative to take measures that day. The choice was made to take measures on the Friday of that week.

3.4.1 Observational data

At least one observer was present every day of the study to note down the number and type of bread purchased by the customers in a logbook (see Appendix II) .

3.4.2 Cash register sales data

The number and type of meals sold in the self-service restaurant during the research period could be traced by a computer based sales system. A limitation of the cash register was that the slices of bread could only be registered by price (price depended on topping, not on the type of bread). Consequently, the slices of bread could not be separated from the bread. It could only be checked whether the observed number of bread rolls plus slices of bread of a specific type of topping was equal to the registered number by the cashiers.

3.4.3 Measures for- and afterwards

At the start of every measurement, at 11.30 a.m., the number of every type of bread (white, brown, whole grain, 'others', and the type of topping) was noted by the students in a logbook. They got instruction to keep track of every refill precisely and also to note this down. At the end of every measurement, at 01.00 p.m., they were instructed to note down the number of every type of bread left over at that moment. Afterwards, the starting number of breads could be subtracted by the final number of breads and added together with the number of refills, to calculate the number of sold breads.

3.5 Data analysis

As reported in the Measures paragraph, data was gathered in three ways: observational data, inventory data of student employees of the restaurant, and cash register data. However, the stocking data will not be included in the analysis since they appeared to be unreliable. Problems with keeping track of the bread were for instance the different methods students used for tracking the stock and forgetting to note down the refills.

To have an extra check for the reliability of the observational data, cash register data was compared to the observational data. Cash register data and the observational data regarding the total number of sold filled sandwiches on Position 1 and Position 2 differed in absolute numbers about 7.3 items (SD = 5.2) on an average of 181 sold filled sandwiches (SD = 39.4). So, for about 4% of the sold filled sandwiches there was no consensus between the cash register data and observational data, what was considered acceptable. Also the data of the extra observer on two of the fifteen included test days appeared to be quite the same (about 5% deviation). The observational data is therefore assumed to be reliable.

Statistical analyses of the purchase data were performed using Two-Way Independent Analysis Of Variance (ANOVA) with the relative share of sold slices of bread as the dependent variable, and type of bread (two levels: whole wheat bread, white bread) and sales context (two levels: product-only, artisanal) as independent variables. The variable 'day' will be used as covariate. Data is analyzed by the program SPSS 20 statistical package (SPSS Inc., Chicago, IL, USA). Statistical significance was obtained when a P-value was smaller than 0.05.

4. Results

4.1 Descriptive statistics

The field experiment was set up to test whether an artisanal sales context was able to affect consumers' purchases during lunch. The visualizing of the bread baking process in combination with authentic attributes in the surrounding was expected to stimulate purchases of the bread on that display in comparison to bread on a neutral-looking display on which only the bread was displayed without further decoration (H_{1a}). This effect was expected to be stronger for white bread than for whole wheat bread (H_{1b}).

From cash register data it appeared that, in total, 7396 paying customers entered the restaurant and were observed during the seventeen days of the study. Data of two test days were excluded, since the circumstances did not meet our criteria. This leads to a final dataset of fifteen days of usable observations for analysis with 6621 customers in total (see Appendix III).

In the fifteen days of study, 4443 items from the bread corner (Position 1 + Position 2) were sold according to the observational data. Especially on Tuesdays, bread purchases were high ($M_{Tuesday}$= 332, SD = 28; M_{day}=296, SD = 60). From cash register data, we can conclude that the bread corner was responsible for 67% of the sold items in the restaurant during lunch. However, it should be noted that a 'bread meal' might consist of several bread rolls, while ordering another menu (e.g. grill or pasta menu) is counted as one item. Therefore, we cannot determine the share of bread meals with respect to total sold meals.

4.2 The influence of sales context and type of bread on purchase decisions

Mean sales of breads with topping and sales of warm savory snacks during the weeks of study can be found in Figure 5 and Table 3. Sales are corrected for the number of paying customers as indicated at the checkout. As can be seen, bread rolls with topping from Position 2a were bought more frequently than bread slices with topping on Position 1a (see also Appendix IV).

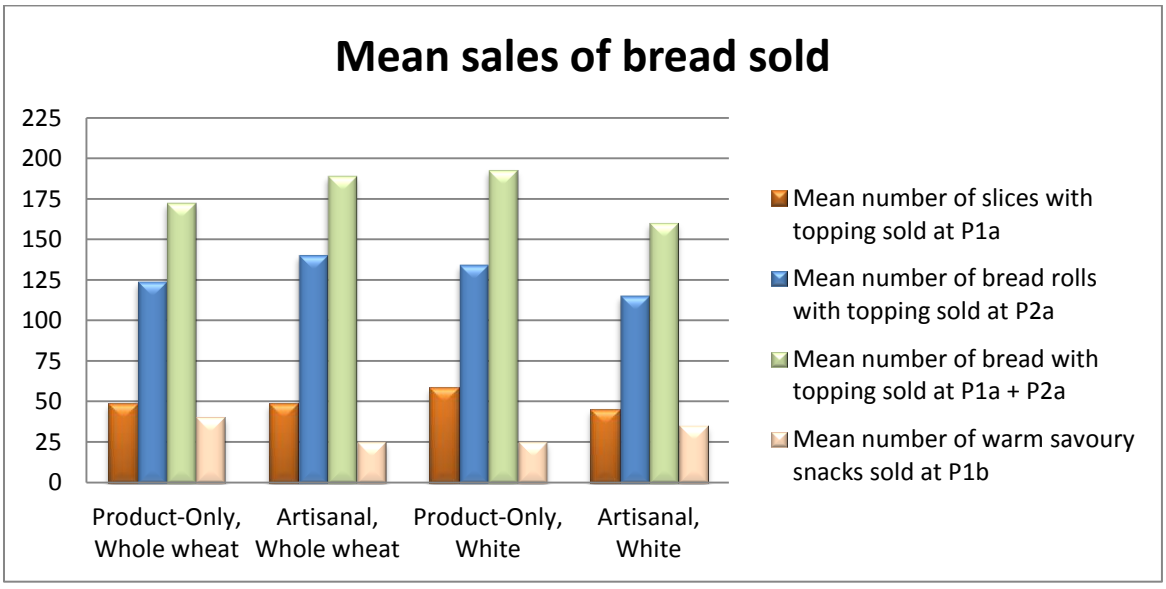

Figure 5 Mean sales of bread sold during the four weeks of study

Table 3 **Sales of bread and competitive breads and snacks as a function of sales context at position 1 and type of bread slices offered at position 1 (mean, SD)***

	Product-only context (n=7)		Artisanal sales context (n=8)	
	Whole wheat bread (n=3)	White bread (n=4)	Whole wheat bread (n=6)	White bread (n=2)
Total sales of all breads and warm snacks at position 1 and 2	**269.7 (92.3)**	**360.7 (25.0)**	**292.2 (23.5)**	**264.5 (53.0)**
Total sales of bread with topping at position 1a and 2a	**172.3 (70.8)**	**192.3 (27.2)**	**188.8 (25.6)**	**160.0 (7.1)**
Sales at position 1				
Total sales at position 1a and 1b	**88.5 (38.0)**	**104.7 (7.5)**	**74.0 (13.4)**	**68.5 (0.7)**
Sales of bread slices with toppings at 1a	48.5 (20.4)	58.3 (14.2)	48.8 (11.1)	45.0 (0.0)
Sales of warm snacks at 1b	40.0 (19.1)	46.3 (6.8)	25.2 (7.6)	23.5 (0.7)**
Sales at position 2				
Total sales at position 2	**181.3 (59.1)**	**256.0 (25.5)**	**218.2 (17.9)**	**196.0 (52.3)**
Sales of sandwiches with topping at position 2a	123.8 (51.5)	134.0 (14.0)	140.0 (22.8)	115.0 (7.1)
Sales of extra breads without topping at position 2b	57.5 (10.2)	122.0 (26.5)	78.2 (25.2)	81.0 (45.3)***

** In all analyses, the covariate 'number of paying customer as indicated at checkout' was included to correct for number of customers in restaurant*

*** Main effect of sales context on sales of warm snacks ($F(1,10)=5.8$, $P=0.04$, $\eta_p^2=0.37$)*

**** Main effect of type of bread slices offered at P1a on sales of extra breads without toppings at P2b ($F(1,10)=5.4$, $P=0.04$, $\eta_p^2=0.35$)*

In order to identify whether an artisanal sales context is able to influence sales, daily field study data observations were analyzed using a Two-Way Independent Analysis Of Variance (ANOVA) with sales context and type of bread as between subject factors (both consisting of two levels). The dependent variable consists of the relative share of sold filled sandwiches on Position 1a with respect to the total sold filled sandwiches on Position 1a and Position 2a. The day of the week and the number of paying customers as indicated at the checkout were used as covariate. Results discussed in this section can be found in Table 4.

Table 4 The influence of sales context and type of bread on purchases during lunch (mean, SD)

	Product-Only Sales Context (n=7)		Artisanal Sales Context (n=8)		P-value main effect sales context	P-value main effect type of bread	P-value interaction effect
	Whole wheat bread (n=4)	White bread (n=3)	Whole wheat bread (n=6)	White bread (n=2)			
Relative share of sold filled bread of P1 with respect to total sold filled bread on P1 + P2	28.27 (2.55)	30.05 (3.73)	26.01 (5.25)	28.15 (1.24)	.407	.449	.978
Relative share of sold savory snacks of P1 with respect to total sold filled bread on P1 + P2 including savory snacks	19.00 (5.35)	19.67 (4.04)	11.83 (4.31)	13.00 (0.00)	**.011***	.839	.763

An average of 52.7 slices of bread were sold on the experimental position during the days a product-only sales context was tested (SD = 17.4), while 47.9 slices of bread were sold on the days the artisanal sales context was tested (SD = 9.5). Meanwhile, on the regular and experimental display together (Position 1a + Position 2a), the average number of sold sandwiches with topping did not change when sales context changed ($M_{Product\text{-}only}$ = 180.9, SD = 53.5; $M_{Artisanal}$ = 181.6, SD = 25.6). With regard to type of bread, the average sold amount of bread was slightly lower on days whole wheat bread was sold as compared to the days white bread was sold ($M_{whole\ wheat}$ = 48.7, SD = 14.4; M_{white} = 53.0, SD = 12.4). Similarly, the average sold filled sandwiches on the regular and experimental display together did nearly change when type of bread changed ($M_{whole\ wheat}$ = 182.2, SD =45.9; M_{white} = 179.4, SD = 26.4).

A two-way ANOVA showed a nonsignificant main effect of type of sales context ($F(1, 10) = 0.75$, $p = .407$) and type of bread ($F(1, 10) = 0.62$, $p = .449$) on the relative share of purchases on Position 1a with respect to the total sold filled sandwiches. Also a significant interaction effect did not occur ($F(1, 10) = 0.001$, $p = .978$). This implies that it is makes no difference whether the bread is sold in an artisanal sales context or product-only sales context. In other words, customers are equally attracted to bread on an artisanal sales context as to bread on a product-only sales context. We can conclude from these results that, *ceteris paribus*, an artisanal sales context and product-only sales context are equally attractive. Next to this, customers appear also to be equally attracted to white as

whole wheat bread. From this can be concluded that consumers do not have a preference for white or whole wheat bread.

As shown in Figure 6, the relative share of purchases on Position 1a with respect to the total sold filled sandwiches was not substantial higher when an artisanal sales context was examined (M = 26.5, SD = 4.6) compared to the product-only sales context (M = 29.0, SD = 3.0). Both hypothesis H_{1a} as H_{1b} should therefore be rejected.

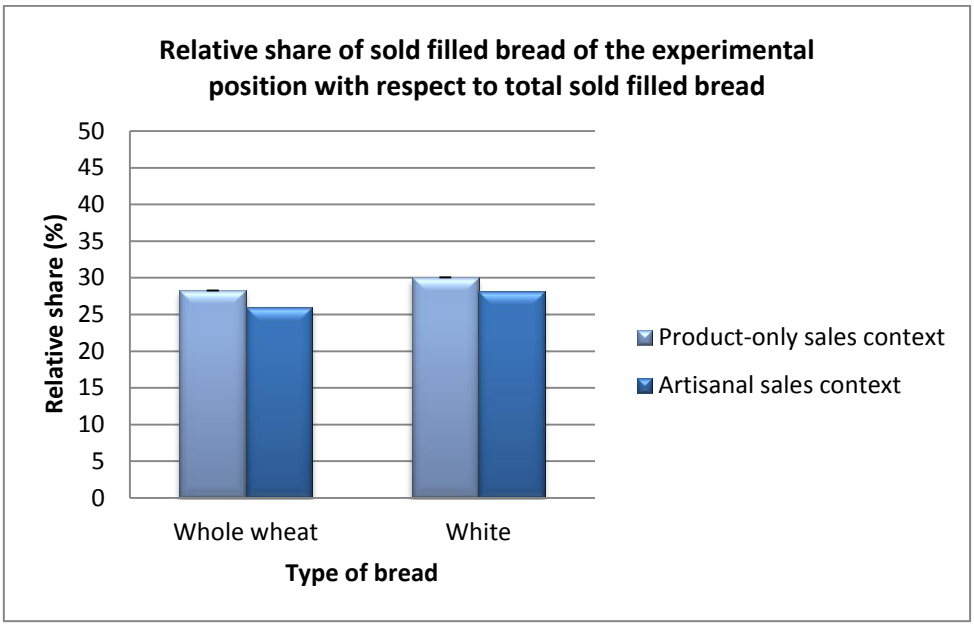

Figure 6 Influence of sales context on proportion of purchases

Since warm savory snacks were due to practical reasons also on the experimental display (Positon 1), we would like to test whether the sales context did unintentionally influence purchases of these snacks. It might be that the artisanal sales context also influenced the purchases of these bread items. Savory snacks consisted of a varied offer of cheese bread roll, croque-monsieur, savory pie, and two types of sausage rolls. From a two-way ANOVA can be concluded that a significant main effect was found of type of sales context on the relative share of purchases of savory snacks on Position 1b with respect to the total sold filled sandwiches plus savory snacks ($F(1, 10) = 9.77$, $p = .011$). When the savory snacks were next to an artisanal display, the relative part of sold warm savory snacks was lower than when the savory snacks were next to a product-only display ($M_{artisanal} = 12.1$, $SD = 3.7$; $M_{product\text{-}only} = 19.3$, $SD = 4.5$, see Figure 7). The total number of sold filled sandwiches plus savory snacks remained virtually unchanged ($M_{product\text{-}only} = 223.6$, $SD = 63.7$; $M_{artisanal} = 206.4$, $SD = 25.2$), while the purchases of savory snacks almost halved in the artisanal sales context ($M_{product\ only} = 42.7$, $SD = 14.5$; $M_{artisanal} = 24.8$, $SD = 6.5$). Whether the adjacent slices of bread on the display were white or whole wheat did not influence purchases of warm savory snacks ($F(1, 10) = 0.04$, $p = .839$). Also a significant interaction effect did not occur ($F(1, 10) = 0.096$, $p = .763$).

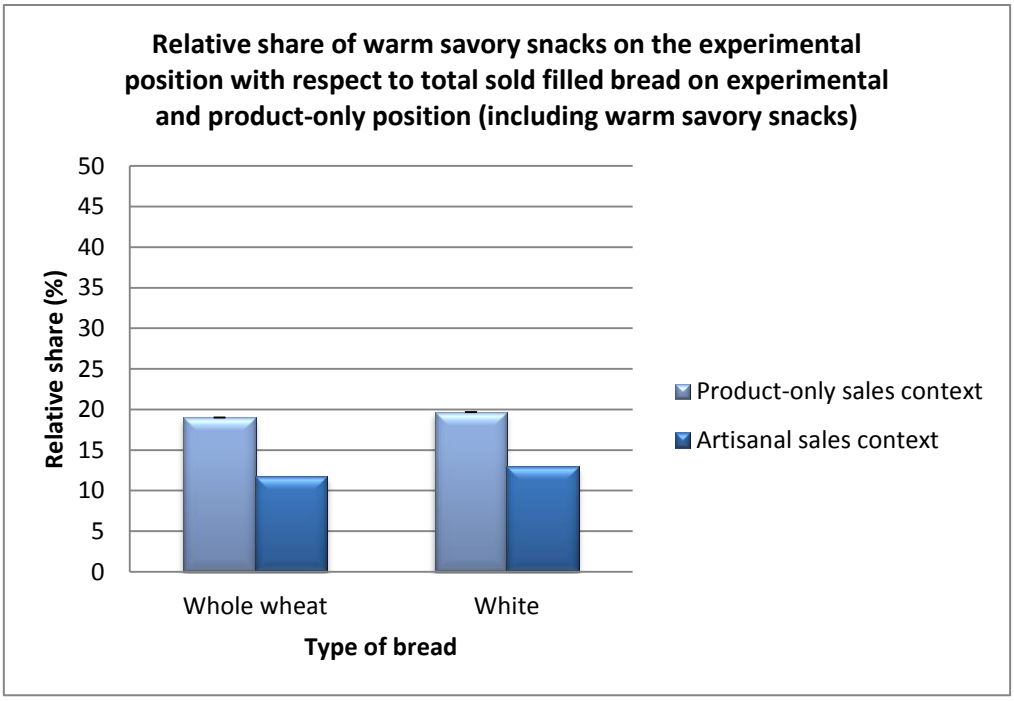

Figure 7 Influence of sales context on proportion of warm savory snack purchases

5. Discussion and Conclusion

5.1 Discussion

The shortage of fibre intake and whole wheat bread can have serious consequences (e.g. Wu et al.; Slavin, Jacobs, & Marquart, 1997). This study examined a nudging strategy to enhance consumption of whole wheat bread in order to enhance fibre intake. The main question is '*Does the visualising of the artisanal bread baking process affect the sales of both whole wheat bread and white bread?*' Results showed that an artisanal sales context neither guide consumers' towards whole bread nor to white bread. During the weeks in which the artisanal sales context was on display, the relative sales of bread from restaurant location was about 27%, which was not significantly different from sales from the same location without an artisanal context (29%). Also, this sales pattern was similar for both white and whole wheat bread. However, an interesting finding in this study is the unintended effect of the artisanal display on warm savory snacks which were also on the experimental display due to practical reasons. When an artisanal display was created with a baker kneading dough behind the display, purchases of warm savory snacks decreased significantly from 19 to 12%. The absence of an effect of the authenticity nudge on whole wheat bread and the presence of an effect on savory snacks were both unexpected. However, several explanations for this finding are possible.

The presence of an effect on purchases of savory snacks while an effect on purchases of sandwiches with topping is absent, is completely against expectations. Besides, we expected an artisanal sales context to stimulate purchases instead of decreasing. A possible explanation might be that associations of healthiness are evoked, which consequently leads to the avoidance of unhealthy snack bread rolls. However, this cannot be supported by the current data and seems not very plausible. Therefore, we assume that this effect is created by an unmeasured factor. From now, the discussion is based on the assumption that an artisanal sales context did not directly affect consumers bread purchases during lunch.

First, it may be that the manipulation was not strong enough to actually evoke artisanal associations and impact choice behaviour of consumers. In this study, we used various artisanal attributes (e.g. red-white checkered tablecloth, bread bin and artisanal baker clothes) to communicate about the authenticity of the bread. It is possible that our artisanal sales context did not consist of the 'right' attributes. A separate (pilot) study could have shed light on consumer perceptions of the bread with and without our artisanal attributes. Results from such a study could indicate whether our manipulation was successful.

A second possible explanation is that the variation in bread rolls at the regular location was larger. Toppings vary approximately every two days (see Appendix I). Consequently, if you prefer the same spread on the second day, you have the same combination of this topping and type of bread on the experimental side (Position 1a), while on the other side (Position 2a) the type of bread roll in combination with the topping might differ from the day before. For instance, if you want the shrimp spread again on the second day, it may be that it is now available on a white baguette instead of a multigrain ciabatta. Due to the multiple types of bread rolls, more variation is available on the regular bread location which might make the chance higher that a sandwich is satisfying and that the bread on that display does not get bored. Seeking for variety has been recognized as determinant of food choices (Rolls, 1986; Rozin & Markwith, 1991). Therefore, this might have influenced consumers choices.

Third, it is also possible that the value perception of bread rolls is higher in comparison with a slice of bread. At first sight, this cannot be an explanation since the artisanal sales context (week 2 and 3) should still increase sales in comparison with the control weeks (week 1 and 2). However, it may be that customers chose for the slices of bread in the first two weeks due to its newness. This might have made people curious to the slices of bread and might have stimulated trial consumption in the first two weeks. As a result, the sales of the slices of bread are about the same and no effect of an artisanal sales context was found.

Fourth, it is possible that an unknown moderator influenced the outcomes. A suggestion is the research population of this study: guests of the restaurant were mainly students. Davis (1979) argued that age is positively related to nostalgia proneness. Therefore, it could be that positive associations due to exposure to an authentic production method only will be effective for an older target group. Presumably, students have not seen this production method in their youth. Actually, the artisanal production method is not a memory of their childhood. So it might be that exposure to this artisanal production method does not evoke positive memories and associations in this target group.

At our experimental sales location, bread was sold in slices, in contrast to the regular bread sales location, where bread was sold as a roll. Some types of toppings (e.g. Mozzarella cheese) could easier be put on bread rolls than on bread slices. Similarly, some types of topping were more convenient to eat when spread on bread roll compared to a bread slice. These practical considerations could have influenced consumer choices and confounded our results.

The last possible explanation concerns the employees: these are fellow students of the guests of the restaurant. It might be that familiar faces attract the guests of the restaurant to that display, whether or not to have some small talk. Next to this, before the experiment took place in the restaurant, the bread corner was only on Position 2. Since the guests are used to buy their bread on that side, it could be that the guests automatically walked to that display. Besides, when walking through the restaurant, the display on Position 2 is in the visual field. This might also attract consumers automatically.

5.2 Limitations and recommendations for further research

This study has some limitations that have to be acknowledged. These limitation will be categorized in limitations with regard to the product, the study design, and the self-service restaurant.

Limitation with regard to the product

Most of previous explanations for the absence of an effect can be summarized by the limitation that whole wheat bread cannot be baked as bread roll (C.W. Elsenburg, personal communication, November 2014). We were forced to use whole wheat slices of bread instead. The guests of the Hotelschool were used to the availability of bread rolls and these should therefore still be offered. Consequently, on one side of the bread corner (Position 2a) bread rolls were offered while slices of bread were offered on the other side (Position 1a). If it had been possible to bake bread rolls of whole wheat, this difference could have been eliminated. Several explanations for the absence of an effect, such as the difference in value perception and the difference in variation, could then have been excluded. Another solution to this problem would be to only offer slices of bread on both side instead of bread rolls.

Limitation with regard to study design

Another limitation to address is that this study only took real purchases into account. It would be interesting to find out what happens between the first step (being exposed to an artisanal sales context) and the last step (the purchase decision). Value can be added to this study by looking further into the mechanism behind. The question is whether an authentic sales context influences consumers perceptions about certain aspects of the bread. Suggestions given in the theoretical background of this study can be examined in an (online) survey in which participants are asked questions about purchase motives, feelings and thoughts during the purchase process. Insight in the mechanisms behind the effect is valuable, since it could be that an artisanal sales context does impact other aspects than purchase behaviour, such as the perception of quality, monetary value and health. This might give directions for future interventions. Knowledge about i.e. the thoughts, feelings, salient values, purchase motives and level of starvation might also give explanations for the absence of an effect. The (online) survey could for instance expose participants to a short movie in which the participant from the eyes of a customer of the self-service restaurants passed by the displays and subsequently stands in front of the artisanal display with a baker kneading dough. In the other situation, the same happens but with a product-only sales context and without a baker. Subsequently, questions might be asked about the associations that come up when they are exposed to this display and the bread. Then, specific questions about taste, quality and value of the product could be asked. In this way, associations and other inferences due to the type of sales context could be examined.

Due to the set-up of the field experiment, it could not be tested whether there was an effect of moderators or mediators. Especially for the type of processing – automatic or deliberative - this could make a difference. Since nudging influences unconscious behaviour, guests who choose deliberatively are less sensitive for the nudge than guests who choose on the basis of heuristics. For instance, familiarity with certain aspects of the food can be decisive for the type of processing. Research from Lee, Shimizu, Kniffin and Wansink (2013) made clear that a higher degree of familiarity with the term ‘organic’ may promote deliberative processing with regard to the term, since these people possess prior awareness of organic foods. Consequently, consumers who were familiar with the term ‘organic’ were less sensitive for the health halo effect. Correction for moderators, including ‘type of processing’, would make the results even more reliable.

A final limitation with regard to the study design is that in the conditions in which the effect of nudging on whole wheat purchases was tested, guests have four choices (whole wheat, brown, white and other sandwiches). Meanwhile, in the conditions in which the effect of nudging on the purchases of white bread was tested only three choices were possible (white, brown and other sandwiches). So, if guests really wanted whole wheat bread they had to walk to the experimental condition, while if they wanted white bread they could choose whether they wanted this as a sandwiches (experimental display) or as a bread roll (product-only display). Whole wheat bread had thus more ‘competition’ from other bread items than white bread.

Limitations with regard to the self-service restaurant

The first limitation with regard to the self-service restaurant concerns the relative established customer base which buys their lunch in the restaurant. Consequently, the changes in the purchase environment were notable, which might have led to attention and thus to a switch to system 2 (deliberative processing). It is possible that the present study mainly compared an artisanal sales

context with a ‘novel sales context’ instead of a ‘product-only sales context’. It would be more favourable if the guests of the restaurant were unique to exclude ‘curiosity’ to the changed display as possible explanation for purchases on the experimental side. Another solutions to overcome this would be that the study is performed for a longer time. The control condition could last for a longer time so that guests of the restaurant get used to this decor.

The restaurant where the study took place may not have been the optimal location for a study into the effect of visualizing an artisanal production process: its appearance is already above regular standards. The restaurant is decorated according to the La Place-concept, which implies that vegetables and fruits are displayed as decoration. Next to this, the La Place concept is known due to its homemade dishes which are prepared in the sight of the guests. The contrast with the artisanal sales context was therefore smaller than when we had created an artisanal ambiance in an ordinary, sober canteen. In further research, we advise to examine this study in an ordinary, sober canteen without employees preparing food on the spot.

Although we expect the students of the self-service restaurant in Amsterdam to be a relative representative group for a school canteen, conclusions cannot by definition be generalized to all students. Cues (informational stimuli) are strongly related to social values, which can change with changing culture and social environment (Kupiec & Revell, 1998). In other cultures or in another social environment, associations and behaviour might differ from this study. This research should therefore also be examined in other (school) canteens.

5.3 Conclusion

Despite its limitations, this field experiment can be considered as valuable. It is one of the first studies which examined the effect of authenticity as a nudge. Strong factors include the fact that it is a real-life experiment in which actual behaviour is measured. Although it is hard in a field experiment to achieve an environment which is stable, this study consisted of several stable factors. For instance, during the study there was a relatively stable menu: almost every type of topping was used in both the artisanal and product-only condition (see Appendix I). This implies that results are not likely to be influenced by the type of topping that was available. Next to this, every day of the experiment there was choice between a meat, fish and vegetarian alternative of the topping. These three choices were available both on the experimental display (Position 1a) and the regular bread display (Position 2a), so that choosing for bread on experimental or regular display did not depend on the type of topping offered. Besides, the menu is classified in such a way that almost every day a sandwich was available of €3.20, €3.60 and €4.00.

To conclude, this field experiment can be assessed as valuable since it gives reliable insights in the effect of authenticity as a nudge. This is a relatively unknown field, especially with regard to bread. The type of sales context and the type of bread appeared not to influence customers’ purchases with regard to bread with topping. However, an artisanal sales context decreased purchases of warm savory snacks. The absence of an effect on bread with topping indicates that an artisanal sales context cannot be deployed to nudge consumers to whole wheat bread. Meanwhile, this study shows that customers do not mind whether the spread is on a whole wheat or white sandwich. So, making the choice for offering whole wheat bread instead of white bread as a manager, there can be contributed to an enhanced intake of whole wheat bread without suffering decreases in sales.

5.4 Practical implications

This research has some important implications for practice. It has been found that the type of sales context and the type of bread do not influence customers' choices with regard to filled sandwiches. Increasing the purchases of whole wheat bread during lunch was not successful. By contrast, the nudge of the present study decreased the purchases of savory snacks unexpectedly. This implies that managers of (sport) canteens are not able to stimulate sales of whole wheat bread by exposing consumers to an artisanal sales context. However, managers *are* able to stimulate whole wheat consumption by making the whole wheat choice available. Next to this, unhealthy choices can be decreased by placing savory snacks adjacent to an artisanal sales context. From this research can be concluded that customers do not mind whether the topping is on a whole wheat or white slice of bread. So, when managers choose to offer whole wheat bread, sales will not decline while whole wheat consumption can be increased.

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Appendix I

Menu of the bread counter in the self-service restaurant

Day	Date	Type of topping on bread on Position 1a and Position 2a (prices)	Type of bread on Position 2a	Type of bread on Position 1a (manipulated factor 1)	Type of sales context (manipulated factor 2) A = Artisanal PO = Product-only
1	**Febr 23rd**	Not examined	-	-	-
2	**Febr 24th**	Smoked salmon – avocado – horseradish cream (4.00)	White bagel	Whole wheat	PO
		Chicken – bacon – tomato – old cheese (3.60)	Brown baguette		
		Goat cheese – honey – walnuts – spinach (3.20)	Wholegrain ciabatta		
3	**Febr 25th**	Mackerel rilettes – cornichons – chive – crème fraiche (3.60)	Multigrain ciabatta	Whole wheat	PO
		Serrano ham – marinated oyster mushrooms – arugula (4.00)	Brown baguette, white baguette		
		Caprese (mozzarella – tomato – basil) (3.20)	Millers loaf		
4	**Febr 26th**	Mackerel rilettes – cornichons – chive – crème fraiche (3.60)	Multigrain ciabatta	Whole wheat	PO
		Serrano ham – marinated oyster mushrooms – arugula (4.00)	Brown baguette, white baguette		
		Caprese (mozzarella – tomato – basil) (3.20)	Millers loaf		
5	**March 2nd**	Tuna salad – apple – celery (3.60)	White baguette	White	PO
		Ox sausage - sour – mustard (4.00)	Brown baguette		
		Roasted pumpkin - hummus – feta (3.20)	Focaccia		

6	**March 3rd**	Tuna salad – apple – celery (3.60) Ox sausage - sour – mustard (4.00) Roasted pumpkin - hummus – feta (3.20)	White baguette Brown baguette Multi grain ciabatta	White	PO
7	**March 4th**	Shrimp salad- dill – granny smith apple (3.60) Pulled pork – cole slaw – mustard mayonnaise (4.00) Grilled vegetables – tomato tapenade – parmesan cheese (3.60)	White baguette Multi grain ciabatta Brown baguette	White	PO
8	**March 5th**	Not examined	-	-	-
9	**March 9th**	Mackerel rilette – cornichons – chive – crème fraiche (4.00) Serrano ham – marinated oyster mushrooms – pine nuts - parmesan - arugula (3.60) Caprese (mozzarella – tomato – basil) (3.20)	Multigrain ciabatta, white ciabatta Brown baguette, white baguette Multigrain ciabatta, white ciabatta	Whole wheat	PO
10	**March 10th**	Mackerel rillette – cornichons – chive – crème fraiche (4.00) Serrano ham - marinated mushrooms – pine nuts - parmesan – arugula (3.60) Caprese (mozzarella – tomato – basil) (3.20)	Multi grain ciabatta, white baguette Brown baguette, white baguette Multigrain ciabatta, white ciabatta	Whole wheat	A
11	**March 11th**	Smoked salmon – avocado – horseradish cream (4.00) Chicken – bacon – tomato – old cheese (3.20) Goat cheese – honey – walnut – spinach (3.60)	Multigrain ciabatta, white ciabatta Brown baguette, white baguette Multigrain ciabatta, white ciabatta	Whole wheat	A

12	**March 12th**	Smoked salmon – avocado - horseradish cream (4.00) Chicken – bacon – tomato – old cheese - rocket (3.20) Goat cheese – honey – walnut – spinach (3.60)	Multigrain ciabatta, white ciabatta Brown baguette, white baguette Multigrain ciabatta, white ciabatta	Whole wheat	A
13	**March 16th**	Shrimps – dill – granny smith (4.00) Ham – bacon – tomato – parmesan - rocket (3.60) Pumpkin – feta – rocket (3.20)	White wrap Brown baguette Multigrain ciabatta	Whole wheat	A
14	**March 17th**	Shrimp salad – arugula - cucumber (4.00) Ham – bacon – parmesan – tomato – parmesan - salad (4.00) Roasted pumpkin – feta – sundried tomato (3.20)	White wrap Brown baguette Multigrain ciabatta	White	A
15	**March 18th**	Shrimps – apple – ribbed celery (4.00) Before 12.20: Ox sausage – sour – mustard (4.00) After 12.20: Roast beef – parmesan (4.00) Grilled vegetables – tomato tapenade – parmesan (3.60)	White ciabatta Multigrain ciabatta White baguette	Whole wheat	A
16	**March 20th**	Smoked salmon – red onion – capers - rocket (4.00) Roasted beef – arugula (4.00) Caprese (mozzarella – tomato – basil) (3.60)	White baguette Multigrain ciabatta White ciabatta	White	A

17	**March 23rd**	Tuna – pesto spread - salad – mayonnaise (4.00)	Multigrain ciabatta	Whole wheat	A
		Chicken – salad – bell pepper (3.60)	White baguette		
		Caprese (mozzarella – tomato – basil) (3.60)	White ciabatta		

Appendix II

Examples of the used logbooks for observations

Logboek observant

Checklist week 1 - 25 febr – 26 febr - Niet actieve bakker-volkoren brood

Datum: …….. …. - …. - ….

Gevraagd om een uitdraai van transacties vóór de lunch? ☐

Gevraagd om een uitdraai van transacties na de lunch? ☐

Instructies doorgegeven aan studenten? ☐

Foto gemaakt van Positie 1 en 2? ☐

Alles volgens de besproken opstelling? ☐

Kloppen de prijzen en het menu?

Menu	Prijs	Check
Makreelrillette-cornichons-bieslook-creme fraiche	€ 3.20	
Serranoham-gemarineerde oesterzwammen-parmezaan-rucola	€ 4.00	
Caprese-mozzarella-tomaat-basilicum	€ 3.60	

Verkochte aantal broodjes

Hard broodje	Makreel	bruin	
		wit	
	Serranoham	bruin	
		wit	
	Mozzarella	bruin	
		wit	
Overig	**Bagel**		
	Croissant		
	Focaccia		
	Kaasbroodje		
	Kaiserbroodje (onbelegd, wit)		
	Kaiserbroodje (onbelegd, bruin)		
	Koffiebroodje		
	Pistoletjes (onbelegd, wit)		
	Pistoletje (onbelegd, bruin)		
	Quiche		
	Saucijs		
	Snee brood (wit)		
	Snee brood (bruin)		
	Worstenbroodje		
	Chocoladebroodje		
Volkoren snee (exp. Positie)	Makreel		
	Serranoham		
	Mozzarella		

Notities

Aantal bezoekers tijdens lunch: …….

Weer:

……

Overige menu's en overige bijzonderheden:

……
……
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Logboek observant

Checklist week 3, 11 – 12 maart - Actieve bakker-volkoren brood

Datum: …….. …. - …. - …

Alle attributen aanwezig?

- Bakker
- Bakkerskleding (inclusief schort en bakkersmuts)
- Broodblik
- Bakplaat
- Deegroller
- Ouderwetse weegschaal
- (Volkoren)meel in zak
- Graankorrels
- Tarwe
- Kan water
- Gist
- Rieten mand
- Poster met molen op de achtergrond
- Geruit tafelkleed
- Krijtbordjes met in ouderwets handschrift het beleg van het broodje

Gevraagd om een uitdraai van transacties vóór de lunch? ☐

Gevraagd om een uitdraai van transacties na de lunch? ☐

Instructies doorgegeven aan studenten? ☐

Foto gemaakt van Positie 1 en 2? ☐

Alles volgens de besproken opstelling? ☐

Kloppen de prijzen en het menu?

Menu	Prijs	Check
Gerookte zalm-avocado-mierikswortelcrème	€ 4.00	
Kip-spek-tomaat-oude kaas	€ 3.60	
Geitenkaas-honing-walnoot-spinazie	€ 3.20	

Verkochte aantal broodjes

Hard broodje	Zalm	bruin	
		wit	
	Kip	bruin	
		wit	
	Geitenkaas	bruin	
		wit	
Overig	**Bagel**		
	Croissant		
	Focaccia		
	Kaasbroodje		
	Koffiebroodje		
	Pistoletjes (onbelegd, wit)		
	Pistoletje (onbelegd, bruin)		
	Quiche		
	Saucijs		
	Snee brood (wit)		
	Snee brood (bruin)		
	Worstenbroodje		
	Chocoladebroodje		
Volkoren snee (exp. Positie)	Zalm		
	Kip		
	Geitenkaas		

Notities

Aantal bezoekers tijdens lunch: …….

Weer:

……

Overige menu's en overige bijzonderheden:

……
……
……
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……
……

Appendix III

Dataset observations

Number of observation	Week[1]	Day[2]	Sales Context experi-mental position (P1)[3]	Type of slices of bread on P1[4]	Total number of slices of bread with topping sold on P1	Total number of bread rolls with topping sold on P2	Total number of slices of bread and bread rolls sold (with topping)	Fraction of slices of bread relative to total bread with topping
1	1	2	0	1	74	169	243	30.5
2	1	3	0	1	37	87	124	29.8
3	1	4	0	1	28	72	100	28.0
4	2	1	0	0	71	150	221	32.1
5	2	2	0	0	61	128	189	32.3
6	2	3	0	0	43	124	167	25.7
7	3	1	0	1	55	167	222	24.8
8	3	2	1	1	39	158	197	19.8
9	3	3	1	1	43	154	197	21.8
10	3	4	1	1	63	155	218	28.9
11	4	1	1	1	63	128	191	33.0
12	4	2	1	0	45	120	165	27.3
13	4	3	1	1	42	99	141	29.8
14	4	5	1	0	45	110	155	29.0
15	5	1	1	1	43	146	189	22.8

[1]**Week**: 1 = February 23rd until February 27th, 2 = March 2nd until March 6th , 3 = March 9th until 13th, 4 = March 16th until March 20th, 5 = March 23rd until March 27th

[2]**Day**: 1=Monday, 2=Tuesday, 3=Wednesday, 4=Thursday, 5=Friday

[3]**Sales Context experimental position (P1)**: 0=Product-only sales context, 1=Artisanal sales context

[4]**Type of slices of bread on P1:** 0=white, 1=whole wheat

Number of observation	Bagel	Croissant	Cheese roll	Sweet and savory pastry	Pistolet white	Pistolet brown	Croque monsieur	Savory pie
1	5	6	7	0	20	3	0	14
2	0	8	6	1	14	12	0	11
3	8	6	3	0	12	5	0	5
4	0	10	10	0	24	27	0	17
5	0	4	11	0	23	34	0	12
6	0	5	0	0	44	41	26	0
7	8	0	9	0	15	14	0	12
8	9	13	9	0	5	28	0	8
9	2	6	3	0	12	19	0	6
10	0	5	0	0	16	5	0	12
11	0	14	7	2	18	25	0	16
12	0	16	4	0	16	47	0	12
13	0	11	4	0	35	26	0	9
14	0	7	3	0	11	2	0	9
15	0	5	0	0	14	13	0	0

Number of observation	Sausage roll	White slice of bread	Brown slice of bread	Meat bread roll	Chocolate bread roll	Soft white buns	Total number sold other bread rolls	Total sold bread
1	8	0	22	38	3	0	126	369
2	5	0	24	0	2	0	83	207
3	6	8	0	20	4	0	77	177
4	14	49	0	0	6	0	157	378
5	21	4	26	0	8	0	143	332
6	28	21	22	0	9	9	205	372
7	16	10	15	0	5	0	104	326
8	16	0	39	0	1	0	128	325
9	7	0	22	7	0	0	84	281
10	9	0	20	0	7	0	74	292
11	8	0	28	0	2	0	120	311
12	8	0	34	0	0	0	137	302
13	17	0	35	0	8	0	145	286
14	11	1	20	0	2	6	72	227
15	13	0	20	0	4	0	69	258

Number of observation	Total warm savory snacks on P1	Warm savory snacks + sandwiches with topping	Fraction of warm savory snacks on P1 relative to warm savory snacks + sandwiches with topping	Number of paying guests in the restaurant
1	67	310	21.6	458
2	22	146	15.1	429
3	34	134	25.4	346
4	41	262	15.6	471
5	44	233	18.9	486
6	54	221	24.4	466
7	37	259	14.3	445
8	33	230	14.3	504
9	23	220	10.5	423
10	21	239	8.8	470
11	31	222	14.0	467
12	24	189	12.7	401
13	30	171	17.5	417
14	23	178	12.9	389
15	13	202	6.4	449

Appendix IV

Absolute numbers of bread slices with topping at Position 1a, total number of bread rolls with topping at Position 2a, and warm savory snacks sold at Position 1b

	Product-only sales context (n=7)		Artisanal sales context (n=8)	
	Whole wheat bread (n=4)	White bread (n=3)	Whole wheat bread (n=6)	White bread (n=2)
	74 (obs. 1)	71 (obs. 4)	39 (obs. 8)	45 (obs. 12)
	37 (obs. 2)	61 (obs. 5)	43 (obs. 9)	45 (obs. 14)
	28 (obs. 3)	43 (obs. 6)	63 (obs. 10)	
	55 (obs. 7)		63 (obs. 11)	
			42 (obs. 13)	
			43 (obs. 15)	
Total number of bread slices with topping sold at P1a	**194**	**175**	**293**	**90**
	169	150	158	120
	87	128	154	110
	72	124	155	
	167		128	
			99	
			146	
Total number of bread rolls with topping sold at P2a	**495**	**402**	**840**	**230**
	243	221	197	165
	124	189	197	155
	100	167	218	
	222		191	
			141	
			189	
Total number of bread with topping sold at P1a + P2a	**689**	**577**	**1133**	**320**
	67	41	33	24
	22	44	23	23
	34	54	21	
	37		31	
			30	
			13	
Total number of warm savory snacks sold at P1b	**160**	**139**	**151**	**47**