Chapter 9
School Cafeteria Experiments for Food Healthy Messages

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La destinée des nations dépend de la manière dont elles se nourrissent (The destiny of nations depends on the manner in which they are fed).
Physiologie du goût—Jean Anthelme Brillat-Savarin

9.1 Introduction

This chapter focuses on salt, which is one of the minerals essential for humans to live. Salt—i.e., sodium—is a necessity for human survival. However, an excessive intake of salt can induce high blood pressure or hypertension. Hypertension is characterized by chronically high blood pressure, defined as systolic blood pressure >140 mmHg and diastolic pressure >90 mmHg according to medical guidelines. Hypertension causes cardiology and kidney disease (Intersalt Cooperative Research Group 1988). The onset of hypertension increases rapidly after the age of 45 years (Japan Preventive Association of Life-style related Disease 2015). The medical costs of hypertension in Japan increase tenfold for people aged 45 years and older. It increased to 41.17 billion yen from 3.79 billion yen. Therefore, learning how to reduce salt intake from an early age and making efforts to avoid excessive salt intake are important.

However, contrary to these health-related imperatives, salt is used abundantly in the food service and processed food industries. The World Health Organization (WHO) recommends 5 g of daily salt intake; however, it is difficult to adhere to this recommendation in Japan (World Health Organization (WHO) 2016). Since salt accentuates the flavor in dishes, we are starting to become desensitized to the good flavors of dishes with milder saltiness. In particular, soy sauce and miso paste are widely used in Japanese homes, increasing salt intake through cuisine based on these two condiments.

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The people of Japan have the high level of salt consumption in the world, followed by Thailand, Korea and Singapore, which are linked (HonKawa Data Tribute 2017). The salt consumption of Japanese people is conspicuously high. Though based on the author's hypothesis and not on scientific data, perhaps Japanese people's need for a high salt intake to supplement the excessive loss of salt from sweating in the hot and humid climate worsens the overconsumption of soy sauce and miso paste. Furthermore, highly selectively brand name rice tastes sufficiently sweet, which may encourage people to prefer their side dishes even saltier. Perhaps Japanese people have become salt addicts who cannot control their salt intake despite our best efforts.

In Japan, the first diseases that are the leading causes of mortality from non-infectious diseases and extrinsic causes for men is smoking and the second hypertension, while for women, the first is hypertension (Ikeda et al. 2012). Compared to the now ubiquitous warnings against smoking, programs promoting salt reduction to prevent hypertension are still in their budding stages in Japan.

In the United Kingdom, programs to reduce the intake of salt to prevent cardiology have been implemented at the national level. The UK Federation of Bakers Ltd has been committed to gradually reducing salt content in sliced bread to 10% (1.0 g) and has achieved that goal (The UK Federation of Bakers Ltd. 2019). This has lowered the rate of cardiology in the UK and cut healthcare costs by around 1.5 billion GBP (Action on Salt and Salt Awareness Week 2017). This case demonstrates the successful education of a population to provide accurate knowledge about a condiment quintessential to cuisine. The reduction of diseases and healthcare costs has resulted in a surplus, that is, new value for society.

In Japan, similar attempts to reduce salt intake have been made by the city of Kure in Hiroshima Prefecture (Kure city 2019). The Kure model is characterized by attempts to increase awareness of salt reduction and recommendations to reduce salt in the food industry including to restaurateurs, urging them to provide low-salt foods. Another noteworthy initiative is the use of seaweed salt. In general, 99% of common table salt is sodium. The largest obstacle in salt reduction is people's misconception that reduced-salt foods are less tasty. Thus, the method of using the ancient Japanese traditional *dashi* broth has been employed to overcome this shortcoming. Japanese cuisine is characterized by the use of seaweeds such as *kombu* kelp to add *umami* associated with sodium glutamate. This ancient knowledge gave birth to the idea of cooking seaweed with salt water during salt production to make seaweed salt. Seaweed salt contains a lower percentage of salt and higher percentage of potassium and magnesium, though exact proportions vary depending on the type of seaweed used. Furthermore, umami added from the seaweed deepens flavor while controlling salt content. Seaweed salt also has the benefit of a higher potassium to sodium ratio than common table salt. Potassium has the effect of cancelling out the hypertensive effects of salt, though bitterness increases when there are large quantities of this mineral.

The following section introduces the essence of economic experiments using university cafeteria meals with the aim of promoting salt reduction by using seaweed salt, as described above. However, while the name "seaweed salt" has a positive connotation and effect in serving food aiming for salt reduction, it can also have negative

effects depending on the purpose. This will be introduced in Sect. 9.3 describing the first experiment. Section 9.4 describes the second experiment for the promotion of reduced salt meals. This chapter demonstrates how one food product, seaweed salt, can leave different impressions on consumers when introduced through different approaches.

9.2 Experimental Economics

The experiment uses a method based on experimental economics. Experimental economics is an academic system for which Vernon L. Smith and Alvin E. Roth received the Nobel Memorial Prize in Economic Sciences in 2002 and 2012, respectively. People were employed as participants to validate whether market principles function in reality as theorized to examine themes such as market turmoil, the collapse of the bubble economy, spectrum auction, and labor market matching. They are given a financial incentive toward goods and services—i.e., the utility of humans as theorized by economic theories—by providing them with rewards proportionate to the hypothetical money they earned in a pseudo-market. For example, the economic theory on market competition fundamentally assumes that individuals seek to maximize personal profit and does not account for relative interest between the individual and the other party, involving a sense of inequality, inferiority, or superiority to others. However, it is impossible to exclude the effects of such emotions from individuals in business, and in fact, these may significantly affect the dynamics.

However, the essence of experimental economics lies in creating a sterile experimental room where all other factors are conveniently excluded for the purpose of studying the theory. That is, the main purpose is observing how human economic behaviors converge to the theoretical conclusions by allowing participants to behave in conformance to the theory while in the experimental room.

In other words, the main purpose of experimental economics is to compare different features of a market to ascertain how it functions according to a theory based on a reward system aimed at personal gain, without awareness of others. This enables proving that a theory actually functions in the experimental setting, as long as the market functions according to the efficacies and reward systems defined by economic theories and humans are conscious of these. Conversely, it would show that if the market does not function according to the theory, there is some flaw or misconception in the theory.

If these things must be taken for granted, we might as well use agents programmed with a learning algorithm, not real humans, and conduct experiments on multi-agent simulations. In reality, however, humans act on psychological bargaining based on the amalgamation of cumulative knowledge and past experiences. Naturally, human participants of experiments act on such internal bargaining as well. Real-world experiments do not seek to forcibly eliminate external human factors, but investigate whether theoretical conclusions are reached, with or without them. Conversely, these human factors are eliminated in a multi-agent simulation. In other

words, the two experimental methods can be compared to find which human factors distort the theory. As such, the two are in a complementary relationship.

Traditional experimental economics primarily sought to observe whether the evolution of an economy conforms to a theory as an endpoint of free human behaviors in the market by fixing utility, reward systems, and other conditions within the experimental setting to fit the theory.

Alongside these types of experiments developed others in which personal preferences and utility are not fixed, but which study them in detail. For example, these studies examined human choices such as whether humans behave fairly, and what kind of pay distribution system they prefer under a particular economic environment or system. These studies are influenced by psychology, and seek to define the functional type of essential human utility and preferences.

Specific studies that have explored people's sense of fairness include investigations of how the costs of labor should be divided under fixed work conditions if you were the CEO: whether to divide it completely equally, based on commission, or a combination of the two. These studies further investigate what styles of distribution are preferred by nationalities such as Americans or the Japanese, ethnicities, ideologies, and emotional and sex differences to explore human nature.

Behavioral economics is a prime example of an interdisciplinary area of studies between psychology and economics. Behavioral economics studies have experimented with and proven human satisfaction and utility systems unknown in previously existing economics, such as how the perceived utility of 1 yen differs dramatically between 1 yen in loss or gain. The core of this theoretical system is called the *prospect theory,* for which Daniel Kahneman won the Nobel Memorial Prize in Economic Sciences in 2002 and Richard Thaler in 2017. Compared to experimental economics, which emphasizes the establishment of experimental methods and theory testing or rebuttals, behavioral economics does not necessarily require experiments, but also uses surveys and other methods that can be validated statistically. Furthermore, it emphasizes establishing economics theories such as utility and behavioral patterns.

Behavioral economics has in recent years been increasingly used in medical research to encourage certain human behaviors. For example, smoking and alcoholism are issues of habituation. Analogous to preventive medicine that seeks to change human behaviors through medication is economics that seeks to change behaviors through financial, emotional, and systemic mechanisms called nudges. The two are in high affinity with one another as academic studies that seek to influence behavioral changes in humans.

In summary, experimental economics can be simply classified into the type in which several economic systems are compared with human wealth and monetary drives, and preferences for services are fixed in experimental settings. In the other type, the economic environment or system is fixed in experimental settings and various subject groups introduced into it to compare preferences between subject groups to explore human nature.

Thus, experimental economics has been evolving with the aim of validating human nature theorized under experimental settings to provide hints to economic planning

in real society, and has been applied as such. However, it has always been questioned whether experimental results can be applied to economics in real life, given the dissociation between the simplicity of economic environments and complexity of the real economy.

This has led to the development of methods in economic experiences that take the experiments from sterile experimental rooms to the field—i.e., actual supermarkets and restaurants. An example is introducing the experimenter's intentions by changing the menu or pricing customers see in a restaurant, bringing in participants of various age groups and sexes to the restaurant, and observing what they order. In this case, participants are compensated, spending this to pay for their order from the menu.

Natural experiments take field experiments in economics one step further into an even more natural experimental environment. Unlike the participants of the above-mentioned field experiments who are invited and paid by the testers for their participation, they unknowingly participate in natural experiments. For example, the tester may increase or decrease the prices of two products alternately to observe the effects of price changes on sales in a supermarket. This may help identify the relationship between two products, such as the relationship between butter and margarine, which are two substitute goods. In other words, sales of one increases when the sales of the other drops. In addition, it can be tested whether it is more similar to the relationship between bread and butter, which are complementary goods, because the sales of one decrease when the other decreases. The participants are customers who have visited the store. The tester shuffles the prices based on a theoretical hypothesis, then rearranges the shelves accordingly. The rest can be observed through point-of-sale (POS) data that reflects customers' purchases.

This chapter introduces two natural experiments conducted by the authors. Study 1 validated how product names that seem compatible with the food at a glance may lower the value if it gives the impression that it is not good for health. Seaweed salt rice from Okinoshima island town, Shimane Prefecture is a premium rice grown through the salinity stress method, in which a solution of seaweed salt made by baking sea salt with umami-filled seaweed is sprayed in the growing stages. Compared to common rice, seaweed salt rice grains grow more robustly and have a stronger, more glutinous texture. It can be priced up to three times the price of the rice commonly used in the school cafeteria. However, the term "salt" can give a negative impression as people become more aware of the importance of reducing their salt intake. Therefore, seaweed salt rice was explicitly priced the same as common rice and served in a school cafeteria to compare sales. The purpose was to determine whether it appeals to consumers despite the promotion of salt reduction. Next, the methods of growing seaweed salt rice were promoted to observe changes in sales. This study was reported at the international conference of EuroSense in 2018 (Akai et al. 2018).

Study 2 was an experiment on reduced-salt menus for preventing hypertension that tested whether the seaweed salt meals encourage students' healthy food purchasing behaviors. It costs more to prepare a low-salt dish than non-low-salt one, so it is avoided by markets. However, there are other proposed reasons for the poor sales of low-sodium products, such as the presumed blandness and lack of flavor, which discourages purchases by all but the most health-conscious consumers. In general,

the lower intensity of flavors of low-salt foods in Japan is enhanced by adding complementary umami from the broth of seaweed or fish. Thus, it costs more than it does to manufacture the same food the conventional way with normal levels of salt. Since this cost difference can never be eliminated in the market, it remains unsure whether low sales can be attributed to poorer taste or higher prices. Furthermore, the market for such products is small, making it prone to poor sales, which drives prices even higher, further exacerbating the effectiveness of promoting salt reduction.

Thus, the present study sought to use a university cafeteria as the field of an experiment in which reduced salt and non-reduced salt products were sold at the same price to observe the changing of sales volume of reduced salt meals. Participants were students who participated in the experiment unknowingly by eating their meals at the school cafeteria as they normally would. This study was reported at the international conference of Pangborn in 2019 (Akai et al. 2018).

9.3 Study 1 Experiment: Introduction of Seaweed Salt Rice in a University Cafeteria

9.3.1 Introduction

Okinoshima island town (shortly, Okinoshima) in Shimane Prefecture is home to the production of seaweed salt. It is made by cooking locally harvested seaweed related to kombu kelp called *arame* with seawater to produce sea salt. Rice has been produced in Okinoshima since ancient times. Specifically, the salinity stress method is employed, because the rice plants are exposed to seawater. In recent years, farmers in Okinoshima have been reviving and further developing their ancient traditional salinity stress farming method to improve the rice making process. Seaweed salt solution is sprayed on the rice plant over its growth processes. Rice produced in this method is sold as Okinoshima seaweed salt rice. It has been covered by television shows and other mass media and has enjoyed a surge in product visibility and boost in sales.

In the last two to three years, foods with the term seaweed salt have gained popularity. A convenience store chain sells seaweed salt fried chicken bearing the geographic name Awajishima island city, which is rooted in its status as a forerunner in the seaweed salt trend. The term seaweed salt suggests a wholesome and flavorful food product for a perceived value added, namely increasing the number of food products also named as such.

This study sought to explore whether seaweed salt is an appropriate name for rice. For Japanese people, rice is sweet, and the side dishes eaten with it are often quite salty. Thus, a name associated with salt is assumed compatible. This good match between salt and rice is likely accepted by the market, given that convenience stores sell salt *onigiri* (rice balls) that contain no other ingredients. Furthermore, in the hot

and humid Japanese climate, consuming enough salt is important in the prevention of heat stroke. As such, salt should be associated with a good image.

However, it is questionable whether the widespread climate of low-salt publicity interferes with people's positive impressions of salt. Thus, this study sought to experimentally validate whether the word "seaweed salt" in the name "seaweed salt rice" continues to maintain its positive connotations and be accepted in the market.

9.3.2 Design

The experimental field consisted of the student group/university school cafeteria at Izumo Campus, Shimane University. The participants of this experiment, who did not know they were participating, are students and faculty of Izumo Campus, who are the users of the cafeteria. The faculties of medicine and nursing are located on the Izumo Campus, so the students who use the cafeteria are likely highly conscious about health.

Usually, seaweed salt rice is not served in this cafeteria. However, seaweed salt rice was served with the usual rice. The purpose was to provide information about seaweed salt to observe the sales of seaweed salt rice. The rice usually served is the Koshihikari variety produced locally in Shimane Prefecture. It is sold in 4 serving sizes: L: 360 g for 151 yen, M: 260 g for 118 yen, S: 180 g for 97 yen, and SS: 120 g for 75 yen.

Okinoshima seaweed salt rice costs approximately three times that of the standard rice served in the cafeteria. However, it was sold at the same price as the standard rice to be evaluated according to the name or brand. This was to avoid unconditional rejection based on the higher price, given that participants were students eating at their school cafeteria.

The experiment was conducted from June to December 2017, except in September, which was summer vacation, during which seaweed salt rice was not served.

The sale of standard rice was interrupted in the second week of October, when the students returned from summer vacation, to serve seaweed salt rice only. This temporarily forced all cafeteria users to select seaweed salt rice to create an environment that encouraged them to eat it as much as possible. Figures 9.1 and 9.2 show the original Japanese poster and English translated version used in the final stage of the seaweed salt rice campaign. These emphasized that the rice did not contain salt, and explained the stages of production of both the seaweed salt and seaweed salt rice. This final stage campaign was intended to examine whether a last-minute surge in demand for seaweed salt rice would occur. An example of a last-minute surge in demand is the increased sales of tobacco before increasing the tax rate or boost in general sales before increasing the purchase tax rate.

Furthermore, Study 2, which involved the low-salt menu introduction experiment, was conducted from October to December 2017. Therefore, as explained later, the latter half of this experimental period was affected by the other experiment.

Fig. 9.1 Japanese original poster

Fig. 9.2 English translated poster

In the last month (December), a survey form was placed in the cafeteria so that cafeteria users who ate the seaweed salt rice could voluntarily write their reviews of the rice. The survey comprised items on the sensory analysis between the standard and seaweed salt rice and their impressions of the seaweed salt rice. Respondents received a vegetable juice as a gift to thank them for participating in the survey.

9.3.3 Results

Figure 9.3 displays the volumes of weekly sales of seaweed salt rice and standard rice. It is normal for Japanese people to order rice with their main dish, given that rice is the staple crop in Japan. The figure shows that sales of seaweed salt rice were much lower than that of standard rice until October. Interestingly, the sales of seaweed salt rice did not increase, even when the sale of standard rice was suspended in the second week of October (10/9–13), forcing users to eat seaweed salt rice in

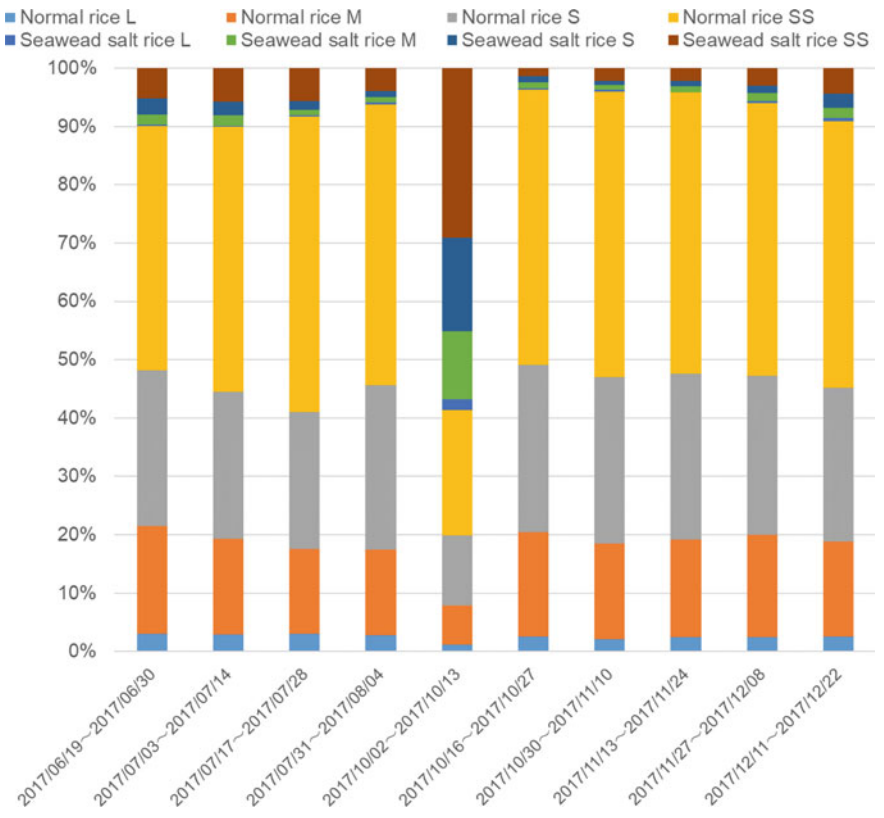

Fig. 9.3 Weekly consumption for each type of rice

the cafeteria out of lack of another choice. However, sales increased when the final seaweed salt rice campaign was launched on December 1 to inform cafeteria users that it contained no salt, and to clarify the steps of the production of seaweed salt and seaweed salt rice. This increase may be explained by two factors: the adequate conveyance of information on seaweed salt rice and a last-minute surge in demand.

These outcomes show that regardless of how delicious the rice is or how expensive it is in the general market, it does not necessarily translate to sales in the target market; in this case, the school cafeteria. Perhaps the value added in seaweed salt rice was counter-intuitively diminished by offering the two options at the same price. Furthermore, the second half of the experiment overlapped with the promotion of salt reduction in the school cafeteria (Study 2). Thus, the term "seaweed salt" may have evoked the negative impression that salt was mixed into the rice. This may be why sales in the second half of the experiment did not increase, despite a period in which standard rice was unavailable in an attempt to obligate the consumption of seaweed salt rice.

According to the survey, 35 of the 50 respondents answered that seaweed salt rice "seemed to contain salt. Figure 9.4 shows the sensory analysis of the results of the seaweed salt rice tasting. Respondents were asked to assess the rice on the axis of hardness (hard and soft) and mouthfeel (chewy and plain). Seaweed salt rice tended to have a harder, more substantial flavor according to the respondents, while standard rice was softer. However, the data were collected from a small sample, which was insufficient to demonstrate statistical significance. Even as students, they seemed to have noticed a difference from the rice they were accustomed to eating.

In recent years, the term "seaweed salt" is seen increasingly frequently, is increasingly visible, and used for many product names such as seaweed salt fried chicken and seaweed salt rice ball. However, we found that when the term is used not for processed food but for raw ingredients such as rice, consumers do not necessarily appropriately understand the meaning. This may be attributed to the fact that the term is often used for the processed products on rice. Thus, labeling a raw ingredient such as rice with the term makes it seem like a processed food with added salt.

In naming food products, it seems important to assess the meaning related to health and food a name adds, and conduct a market test, as we did in this experiment. Specifically, this is important for products in high competition with existing products to which consumers are already loyal, making brand switching less likely. In this case, it is important to have a striking or memorable product name that conveys a healthy image and stance or attitude as well as packaging or health data that explain these suppositions.

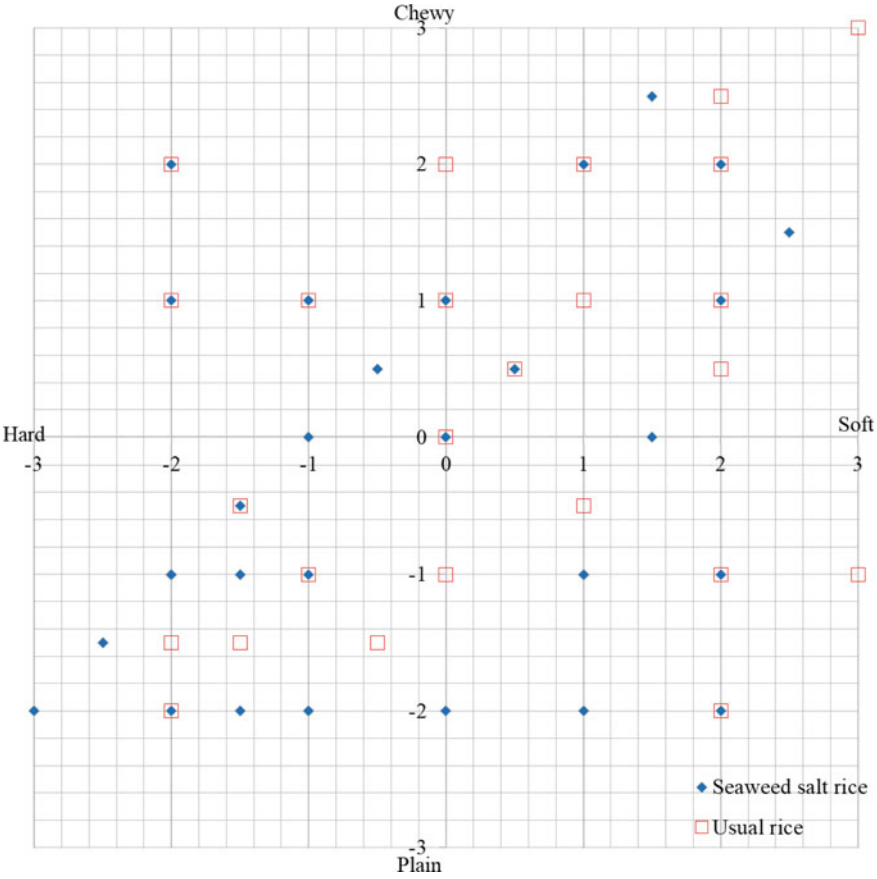

Fig. 9.4 Sensory analysis of rice type

9.4 Study 2: Low-Salt Menu Introduction Experiment in the University Cafeteria

9.4.1 Introduction

Seaweed salt has a good sodium-potassium balance and enables the production of low-salt foods by bringing up the umami of seaweed. However, low-salt menus come with a cost: higher costs of ingredients such as low-salt condiments translate to a higher price of the final product, leading to consumer avoidance. However, regarding the problem with low-salt foods, it is not clear whether this is truly because of a price issue or people's preconceived notions that low-salt foods are bland and not tasty. Food companies have also released various low-salt products in the market, but their sales are not good. They are also unsure about whether this can be attributed to the

price difference or compromised flavor. Thus, in this study, a menu normally served at the student cafeteria and a low-salt version thereof were sold at the same price to study which had the higher demand. Furthermore, based on sales, it was tested whether reduced-salt foods were received well by young university students.

9.4.2 Design

The menu at the cafeteria at Izumo Campus, Shimane University was used. The two most popular dishes on the standard menu, namely pork and chicken, were selected as foods to be served with reduced salt. The first was *shio-buta-itame*, or salt-fried pork, and the second *karaage*, or fried chicken. These popular dishes recorded the top sales among dishes using the two meats served at the same time the year before. However, the salt-fried pork dish contained 2.9 g of salt and fried chicken 2.6 g. Neither contained unusually high amounts of salt compared to the salt content of other common dishes. To reduce the salt, that used in these dishes was substituted with seaweed salt. The seaweed salt used in this study is produced in Okinoshima, Shimane Prefecture and contains 35,000 mg sodium, 380 mg calcium, 340 mg potassium, and 960 mg magnesium per 100 g. Low-salt versions of other condiments such as soy sauce were also used to halve the amount of salt. The prepared low-salt dish was tried at a food tasting by ten physicians who work with hypertension prevention, such as those working in pathology at the faculty of medicine and in the departments of nephrology and family medicine. The salt-fried pork and fried chicken dishes contained 1.6 and 1.5 g of salt, respectively after reducing the salt, and were sold at the same price of 280 and 302 yen, respectively.

These dishes were routinely served, for example, salt-fried pork in the first week and fried chicken in the second week. The menu included photographs displaying both the regular and reduced-salt versions of the dishes. Figures 9.5 and 9.6 show the less salty pork and chicken meals.

In explaining the reason why a reduced-salt menu was introduced in the school cafeteria, it was not mentioned that this was an experiment. Rather, it was promoted as a limited edition special menu to promote salt reduction, and accompanied by an explanation of the importance of reducing salt in the cafeteria.

The purchase data was stored as POS data, which was used to compare sales.

9.4.3 Results

Figures 9.7 and 9.8 show the daily sales volume for each less salty food. Twelve servings of the reduced-salt pork menu and 16 servings of the reduced-salt chicken menu on average per day were prepared. On average, 85.7% of the prepared reduced-salt pork and 97.0% of chicken meals were sold.

Fig. 9.5 Photo menu of less salty pork meal

The results indicated that with the price being equal, the sales of reduced-salt foods achieved high level. Furthermore, the fact that it continued to sell out after its introduction showed that the students found the flavor acceptable. The majority of participants in this experiment were students who used the cafeteria; thus, they were sensitive to pricing. We found that as long as the price and taste were the

Fig. 9.6 Photo menu of less salty chicken meal

same, young people accepted reduced-salt foods. Since it is difficult to make low-salt eating a habit, it is recommended that it be promoted from an early stage to prevent hypertension. However, young people tend to rely on eating out, which can make their environment a difficult one in which to eat a low-salt diet. Therefore, it is important for the school cafeteria, which is responsible for university students' health, to introduce low-salt options to nurture a low-salt habit among young users before they enter their adult lives.

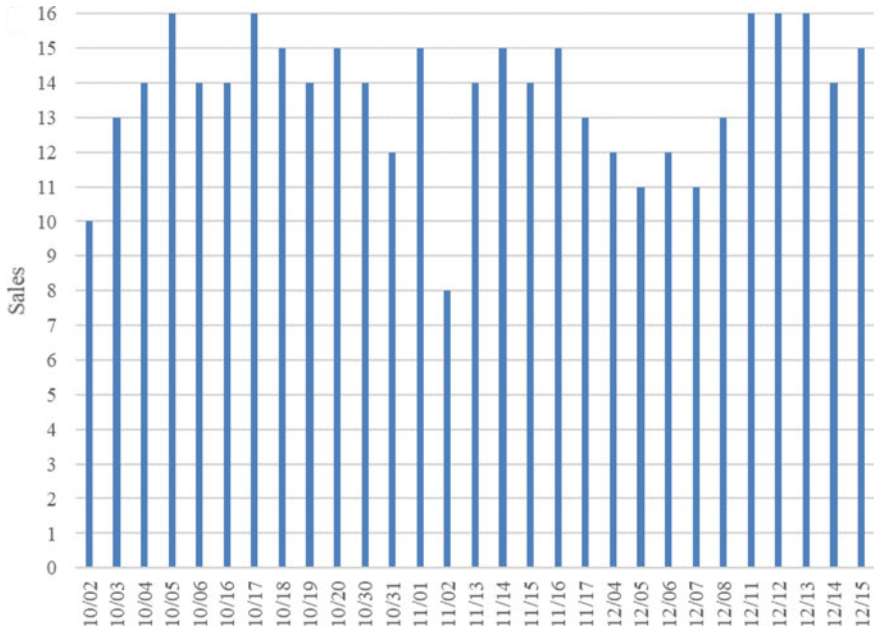

Fig. 9.7 Daily consumption for less salty pork and vegetables stir fry

Fig. 9.8 Daily consumption for less salty fried chicken

However, it is very difficult to avoid the added costs of ingredients to develop reduced-salt menus. Thus, actualization through the efforts of the cafeteria is not realistic, and government subsidies and university support may be required. A simple method may be to dilute the soups of soup noodle dishes. Our observations of people with a high salt intake in Shimane University cafeteria revealed that they frequently ate noodle dishes. Relatively flexible ways to provide low-salt options such as offering the soups in noodle dishes in reduced-salt versions may therefore be an effective and familiar way to reduce the salt intake of young people.

9.5 Conclusions

This chapter introduced a natural experiment plan using experimental economic methods with the university cafeteria as the experiment field to introduce seaweed salt rice and reduced-salt meals. In the former, POS data were used to observe the changes in sales, and a survey tasting analysis and image analysis were performed. In the second experiment, POS data were used to observe sales.

There are several limitations to this study. First, neither experiment reflected the general market, because both were conducted in the university cafeteria. Furthermore, we would have liked to conduct the study by providing the reduced-salt dishes at a higher and lower price than the standard versions of the menu to study the demand for the reduced-salt menu as a substitute of the standard menu. However, this was not done, assuming that students would likely select the cheaper version. Other limitations include the emphasis on inferential discussion, and omission of statistical tests and estimations. Thus, there are limitations regarding the validity of the results as scientifically obtained data.

However, there are also benefits in using a school cafeteria as an experimental field. It is possible to conduct these experiments at any university as long as the cafeteria is willing to cooperate in the study. In addition, this model is applicable to other cafeterias as well, such as those at private companies and government offices. Conducting such studies in other universities and companies will enable more effective meta-analyses. Once there is large enough data, it will be possible to perform statistical tests to confirm the scientific validity of the results. This will lead to the more active promotion of salt reduction, and with time, to the actual reduction of salt in the diets of Japanese people.

Research related to food may seem difficult, because it seems hard to gain entry to the field and involves complicated procedures such as cooking and contracts with restaurants. However, the science of food studies involves experiments based on simple observation.

We hope this study provides useful hints for the future research of readers as an experiment conducted in the familiar setting of a school cafeteria.

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