

Market Scene of China's Cultured Meat Market Over the Next Five Years

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Abstract. In recent years, cultured meat has blown a craze all over the world and has become popular in many European and American countries. China is also vigorously developing the cultured meat industry and has also achieved initial results. The goal of this research was to look at the Chinese cultured meat business over the next few years. To figure out the Chinese cultured meat market, this paper mainly applied the marketing mix theory and SWOT analysis tool to comprehensively analyze the internal and external factors of cultured meat from the perspective of consumers. This research concluded that the future development of cultured meat in China is still objective, but a lot of promotion needed to be done in the induction stage of the cultured meat product life cycle to improve the acceptance of consumers. More importantly, let the cultured meat technology mature as soon as possible since this is the main factor affecting the acceptance of consumers.

Keywords: Cultured meat; Chinese market; SWOT analysis; Marketing mix theory.

1. Introduction

1.1 Research Background

In the last few years, the European and American markets for cultured meat have gained a place. For instance, the United States has become the world's largest cultured meat market. In China, the market position of cultured meat is still at a low point. Chinese policymakers, on the other hand, have realized the enormous benefits of producing meat from plants and growing it directly from cells. In late 2020, the Chinese government dubbed "Green Biological Manufacturing". Cultured meat processing is among the 20+ research projects funded by this award, which is estimated to be worth 600 million RMB (\$93 million). It is predicted that roughly 20 million RMB of that will be dedicated to the development of alternative proteins. Therefore, the cultured meat industry would have a bright future in China. China is the world's largest emitter of greenhouse gases and the largest investor in renewable energy. According to statistics, China emitted 27% of global greenhouse in 2019 which emitted more than the entire developed world combined. This causes a severe impact on the natural environment and runs counter to China's sustainable development strategy. Therefore, China has committed to achieving net zero emissions by 2060 and peak no later than 2030. In order to alleviate the degradation of the earth's environment and reduce the pressure on the earth, The Paris climate accord intends to keep global warming to far below 2 degrees Celsius and to "pursue measures" to keep it to 1.5 degrees Celsius. Greenhouse gases are one of the primary causes of temperature increases. The livestock industry is one of the most significant contributors to environmental harm; the main sources and types of greenhouse gas from livestock systems are methane production from animals (25%), carbon dioxide from land use and its changes (32%), and nitrous oxide from manure and slurry management (31%).

In addition to causing damage to the environment, animal plagues are becoming more prevalent. More epidemics have occurred in recent years, and animal plagues have become more widespread. Considering last year's swine fever outbreak, Swine disease caused significant economic losses in China, which include both direct and indirect effects. According to the report, the entire economic loss represents 0.78% of China's GDP in 2019, with effects seen in practically all economic sectors via linkage to the pig industry and a significant fall in consumer surplus. According to the official website of Beyond Meat, long-term consumption of real meat increases the risk of cancer and other

diseases. Cultured meat is saving many people from having to pass on co-morbidities and animal diseases. As a result, eating cultured meat is not only good for human health but also avoids the problem of price rises caused by animal plagues. According to Statista, total worldwide meat production in 2021 will be 329.28 million metric tons, with China producing 88.87 million metric tons, accounting for around 27% of total global consumption [7, 8]. Furthermore, global per capita meat consumption in 2021 will be 42.4 kilograms, whereas China's per capita meat consumption will be 45.17 kilos, making China's per capita consumption about 1.07 times that of the rest of the world [7, 8]. As a result, China has a great demand for and a huge supply of meat products.

1.2 Research Gap

On the whole, this paper may enrich the existing research in two dimensions. Firstly, cultured meat will become a big subject in China's future, according to the Chinese government's Ministry of Science and Technology's research subsidies for cultured meat technology and China's desire to change greenhouse gas. Secondly, people throughout the world are concerned about food safety. Animal plague is both a common and unavoidable occurrence in today's world. Eating cultured meat instead of real flesh could avoid the impact of animal plague on humans. Thus, the research gap would be what will culture meat's market position be in the next five years.

1.3 Fill the Gap

The remaining portions of this study will employ the marketing mix theory to thoroughly assess and anticipate the market scene of China's cultured meat market over the next five years from four viewpoints, including consumer purchase intention, pricing strategy, promotion strategy, and market position prediction. Section information review provides sufficient literature on the existing and future commercial position of cultured meat in China.

2. Literature Review

2.1 Marketing Mix Theory

For decades, the marketing mix has been utilized as a technique for efficient marketing. The source of the marketing mix is the single P (price) of microeconomic theory. McCarthy introduced the marketing mix, sometimes known as the 4Ps, as a technique for implementing marketing strategy. The marketing mix is not a scientific theory.

Since shortly after World War II, it has functioned as the organizing principle for numerous MBA marketing courses since just after World War I, and it is the key organizing topic of many MBA marketing courses. The first stage of the marketing mix defines the period between 1900 and 1948. During this time, until shortly after World War II, it can be seen that the growing aspects of branding would eventually constitute the marketing mix notion. The preceding period, from 1948 to 1960, is included in the second stage of development. A survey of the literature during this period reveals the origin and expansion of the phrase "marketing mix" as jargon. During the 1950s, a substantial quantity of work was produced that contributed to framing the notion of the marketing mix. McCarthy's textbook presented the 4Ps near the end of the era. The third stage spans the years 1960 to the present. During this period, there has been no discernible change in the structure of the marketing mix notion, but it has been thoroughly explored. It has become accepted as the accepted view of marketing management.

2.2 Important Result

Product, pricing, promotion, and site are the four important considerations that must be made in the efficient marketing of a product. The number of Ps is extended to five, six, or even seven in some cases. It is suggested, for example, that in the marketing of services rather than tangible items, people

(talented and motivated employees) and procedures (how the client receives the service) are just as essential as the original 4Ps.

The term "product" refers to both consumer and industrial items and services. Goods exist in the physical world and may be touched. Services do not have a physical existence, but they fulfill customer demands in different ways.

The price of a product is the amount paid by buyers. A critical component of the marketing mix is determining acceptable pricing for a commodity or service. The price of a product can have a significant influence on its customer demand. However, if the pricing selection is incorrect, the product may be put in danger. As a result, pricing considerations are among the most important difficulties that marketing managers confront when deciding the price of a product or service. Price elasticity of demand might be a useful tool for determining how sensitive demand is to price changes. Price elasticity of demand (PED) is calculated as the percentage change in the quantity requested divided by the percentage change in price. The substitution effect occurs when price changes, for one thing, are examined relative to prices of other items, resulting in fewer of the good whose relative price rises are requested. This indicates that as the price of a specific type of product falls, demand for another product will fall as well because individuals are more motivated to buy the lower-priced product, and lower-priced product demand rises. However, not only should the buyer and seller be familiar with the monetary amount, but also with the quantity and quality of the goods or services to be traded. The time and location of the exchange and payment, the type of money to be used, the credit terms and discounts that apply to the transaction, product or service guarantees, delivery conditions, return rights, and other considerations. The value that the buyer must forego in order to complete a purchase transaction. Because the price entails a "sacrifice," this variable is diametrically opposed to the buying intention, and the higher the cost, the lower the chance of purchase. Therefore, although pricing is one of the most important elements of buying a product or service, it still has some additional conditions append at the back.

The goals of the promotion are to raise awareness of goods and services and to remind customers of current offerings. It may also boost the business's public image, which can help it retain high customer loyalty. Promotional activities are required for improved marketing tactics. As a result, corporations must prioritize promotional initiatives. Promotional activities are marketing tools used to spread information about products and services to consumers in order for businesses to survive and grow. Promotion could increase customer traffic and brand awareness.

When cultured meat first introduces to the Chinese market, offering a buy one, get one free promotion would be necessary. For example, every time a new product was introduced to the store, the supermarket would always run this promotion. During the outbreak, Tesco promoted items heavy in fat, salt, or sugar by limiting the buy one, get one free deal. This promotion can help a product attract many customers.

The place can also be known as the channel of distribution. There are two main distribution channels which are the online market and offline market. The online market is more focused on e-commerce and online purchasing has become the norm. Choosing the right place to sell the products or services is one of the keys to success. Vegan burgers and meatballs are being served on grocery shelves and fast-food outlets across the United States, demonstrating to customers that there is an alternative to relying on the animal-based protein. Therefore, one of the main places for selling cultured meat would be in supermarkets which are packaged as burgers or meatballs. Also, selling online would also be a suitable selling distribution for cultured meat. According to Alistair Blair, proprietor of the specialized fish stores The Fish Society, the secret to selling high-value products online is to be "very, very specific about what the consumer is getting." Customers who shop on his website may choose the exact size of the cut they want - in the instance of cod steaks, they can choose from 20g increments - and are shown extensive images of the fish and seafood available. Since there is a large number of real meats selling online that people tend to shop online because of the convenience and it offers more choices to customers. It would offer more choice to customers and increase the competitive level of real meat since they are using the same selling distribution.

2.3 Summary

On the whole, the marketing mix mainly analyses the business value of a product or service from these four dimensions comprehensively. However, there isn't a standard for marketing mix to judge whether it is good product or services.

3. Method

3.1 Research Design

SWOT analysis is a type of strategy analysis in which the significant internal strengths and weaknesses, as well as external opportunities and threats, that will affect an organization's future direction and success, are identified and analyzed. It is a way of evaluating the four aspects of a company or product. It is a tool that may assist a firm in knowing what it does well now and developing a successful plan for the future. SWOT analysis is a thorough method for analyzing a product or a business since it considers both internal and external issues. Strengths and weaknesses reflect the strengths and areas for improvement of a product or company itself. Opportunities and threats describe what the external environment brings to or challenge the product or a company. This article will use SWOT analysis to analyze from the perspective of cultured meat consumers by using Marketing Mix Theory outlined. Although cultured meat is currently a prominent issue across the world, there are still benefits and drawbacks.

Nike is a successful sports brand whose products are sold worldwide which sold products to more than 150 countries all over the world. They have a successful marketing strategy that also applies SWOT analysis when making a marketing strategy. For example, Nike's strength lies in the fact that it is a very competitive and dynamic organization, that its products are manufactured in low-wage factories in the Far East, and that it can therefore concentrate on marketing, image, and research projects. [19, 20]. One of the weaknesses of Nike is that sales are heavily dependent on its share of the shoe-wear market. As a result, rivals such as multi-dimensional enterprises may be able to choose market sectors with cheaper prices than Nike and focus on marketing and advertising. The opportunities facing Nike are the increasing internet environment, which means that the online market could be the most potential market for any company. Nike users can place an order online first, then pick it up in an offline store. This technique not only helps Nike to market online with a comprehensive and successful strategy but, it also enables Nike to build a database that collects consumer information and follows up with initial consumers to retain a strong customer relationship. The rising competition was one of the most critical issues Nike faced. Nike competes with various competitors, including Adidas, Lululemon, and Puma, since it targets different segments in a range of sports products. Therefore, Nike can't just keep releasing old designs in new colors. Nike would recapture market share from competitors via innovation and the manufacturing of new stylish sneakers. Therefore, Nike is a good example of marketing SWOT analysis which helps Nike to make a successful marketing application by having a comprehensive analysis of a product from the perspective of the internal and external environment of Nike. Through the analysis of SWOT analysis, this paper will get a more comprehensive analysis report of the cultured meat market.

3.2 Cultured Meat

Cultured meat is created by cultivating animal cells in vitro. Because lab-grown meats are created from cells, they provide a solution to the ethical difficulties associated with cattle agriculture. Cultured meat is developed in a sterile, bacteria-free environment. Despite being created in a laboratory, lab-grown meat is identical to "real" meat since it is formed from animal cells.

At the moment, the market divides cultured meat technology into two categories: animal cell extraction technology and plant-based meat technology. Plant-based meat is meat that is derived from plants. It is designed and manufactured to look, feel, and taste like traditional meat made from animal ingredients. According to the study, plant-based meat and dairy substitutes "provide a healthier and

more environmentally sustainable answer". . In addition, research indicated that plant-based meat generated fewer greenhouse gas emissions than the animal products it replaced. According to one study, substituting pea protein for 5% of German beef consumption might cut carbon dioxide emissions by up to 8 million tonnes per year. Another study discovered that plant-based burgers emit up to 98% fewer greenhouse gas emissions than cattle burgers. In addition to the benefits to the environment, plant-based meat also brings many benefits to humans themselves. One study discovered that plant-based meat was beneficial for weight reduction and that it may be utilized to aid patients with certain health concerns. Plant-based meat is perfect for folks who need to exercise or who have chronic medical concerns. Owing to the fact that eating plant-based meat not only meets their meat demands in terms of texture and flavor, but it also aids with weight management and muscle building. Furthermore, eating plant-based meat can provide nutrients that real meat may not be able to absorb.

However, there are still some technical defects in plant-based meat. Some plant-based meat, however, includes fillers and additional salt, and they may be heavy in saturated fat. Furthermore, plant-based meat may also have lower levels of zinc and other micronutrients than traditional meats. According to research Plant-based goods were nutritionally assessed and compared to animal counterparts. Plant-based goods' salt concentration was usually less than 500 milligrams per 100 grams (mg/100 g) . This varied widely, with some foods holding up to 1,200 mg/100 g of salt, or 3 grams (g).

3.3 SWOT-Analysis

3.3.1 Strength

From the perspective of marketing mix analysis, the strength of cultured meat is mainly the product itself. To begin with, the strength of cultured meat from the perspective of the product can be divided into two main elements. One of the most significant product strengths is that cultured meat is good for the human body compared to real meat. When taken in moderation and as part of a well-balanced diet, cultured meats are generally healthy. And Lal concurs that Plant-based meat is a better option than meat." Alternative meats tend to have less total and saturated fat as well as higher key nutrients. High cholesterol can be caused by eating meals high in saturated and trans-fat, increasing the risk of chronic diseases. In contrast, fiber consumption can lower the chance of developing cancers. Red meat has been linked to an elevated risk of chronic illnesses like Alzheimer's disease, arthritis, and obesity. Processed meats such as fried fish & chips, burgers, and sandwiches are also linked to an increased risk of stomach and bowel cancer. As a result, customers will prefer cultured meat to genuine meat. People who consume a lot of meat over time are more likely to get cancer and other chronic diseases. While eating real meat has some nutritional benefits, long-term intake might cause lasting harm to the body. As a result, eating cultured meat instead of genuine meat not only provides the same or even more nutritious content but also lowers the risk of illness.

What's more, cultured meat would be safer for customers than real meat in terms of food safety. To increase meat and poultry production efficiency and speed up delivery time, contemporary breeding farms employ veterinary medications such as antibiotics, growth hormones, and anthelmintics for disease management and animal growth promotion. As a result, meat food safety has become a prominent subject in the twenty-first century. The Food and Drug Administration (FDA) has licensed a wide range of steroid hormone medications for use in animals since the 1950s . Many scientists, activists, regulators, and politicians have expressed urgent concerns about the use of antibiotics in animals because they could create drug-resistant strains and endanger human health. According to WHO, the use of antimicrobials to prevent illness should be justified only when a specific disease is present or expected to arise on-site. At the same time, subclinical disease control through the use of antimicrobial agents and therapeutic interventions for recognized clinical bacterial diseases are often the only viable options, and when disease prevention measures fail, treatment imposes an economic and humanitarian burden that still contains some potential health impacts on the human body. Even though the regulatory department has strong restrictions on antibiotics and

growth hormones in animals, the body should consume as little hormone-laden meat as possible because no one can guarantee that the growth hormones and antibiotics used in meat and poultry are safe for humans. As a result, cultured meat will be a good substitute for genuine meat. Antibiotics and growth hormones can be avoided by eating cultured meat.

3.3.2 Weakness

The main weakness would come from the price element from the perspective of marketing mix analysis. To begin with, cultured meat is far more expensive than actual meat. Because of improved manufacturing scale and lower material costs, the price of cultured meat has dropped to \$9.80 per burger. Nonetheless, Post concedes that lab-grown beef is "far costlier" than a burger purchased at a supermarket or restaurant. In the US, the average price of a burger would be \$6.05 which is lower than the cultured meat burger by about 62% . When applying the price elasticity of demand (PED) tool to analyze the relationship between price and demand. Therefore, when the price of cultured meat is higher than the real meat, consumers would tend to buy real meat instead of cultured meat since the price factor would be one of the most important conditions for consumers when buying a product. Therefore, the relatively high price of cultured meat would not be the first choice for consumers compared to real meat.

3.3.3 Opportunity

Policy, environment, and legal factors would be the opportunities for cultured meat in the Chinese market. To begin with the opportunities for cultured meat, the Chinese government has introduced some policies to support the cultured meat industry. In terms of policies and support funding, the Chinese government is actively promoting the growth of China's cultured meat sector. The National Natural Science Foundation of China, for example, is financing technicians to create cultured meat technology. In June 2021, for example, a government-funded program dubbed "High-efficiency biological production technology of cultured beef" was begun. The program will boast one of the best agricultural scientific institutions in China. . The Chinese government's financial and policy assistance has made it possible for cultured meat to reach the Chinese market. Consumer acceptability will also rise as a result of government support. Not only that, but it has created a favorable societal environment for the future growth of cultured meat in China. Cultured meat makers will be smoother when entering the Chinese market, which will aid in the promotion of the Chinese cultured meat industry in the next couple of years.

The second main opportunity for cultured meat is to help China reduce Greenhouse Gas emissions which can benefit the environment. Cultured meat production can reduce water consumption, greenhouse gas emissions, eutrophication potential, and land use compared to normal beef production. . This potential has been evaluated in a variety of life cycle studies, but they are all based on hypothetical models of how farmed meat is produced. . When cultured meat was compared to a traditionally produced animal, it was discovered that it generates an average of 80% less greenhouse gas emissions, 1% less land consumption, an average of 93% less water consumption, and less energy use. In general, producing cultured meat has a lower environmental effect than rearing most fowl. This not only allows people to eat healthy cultured meat with a comparable flavor, but it also conforms to the aims of China's sustainable development and The Paris climate agreement for reducing Greenhouse Gas emissions.

The last but not least, from the perspective of legal in China, cultured meat would have a bright future in China. On January 26, the Chinese government unveiled its official agriculture plan for the next five years, which includes a strategy for lab-grown meat. For the first time, China's future food security programs include cultured meat and other "future foods", such as plant eggs. . Cultured meat is a relatively new technology that is expected to replace slaughterhouses with laboratories, thus disrupting traditional animal husbandry. They are grown in bioreactors from animal stem cells and fed with nutrient broth. Therefore, legal recognition of cultured meat technology is not only a certain affirmation of cultured meat technology but also promotes the development of cultured meat in the Chinese market.

3.3.4 Theatern

Cultured meat will pose a hazard to ethics. For vegetarians, cultured meat from animal cells is not acceptable to all vegetarians. But not for some religions. To be lawful in Islamic and Jewish law, meat must be killed and cooked according to precise guidelines. Cultivated beef is anticipated to spark heated disputes among religious leaders all over the world and has already begun in some areas. In Indonesia, which has the world's largest Muslim population, the strong Muslim organization said that farmed beef is marked as “legally unclean and prohibited”. There are also many Muslims in China, and their opinions on artificial meat will be one of the most important variables in determining whether artificial meat will be accepted in the Chinese market. According to the poll, Muslims account for around 1.6% of the overall population, or approximately 22 million individuals.

4. Result & Discussion

Therefore, the main internal benefit of cultured meat would be the product itself from the perspective of consumers that cultured meat could provide nutrition to the human body to avoid eating too much real meat. Since cultured meat substitutes the real meat to a certain extent, the demand for real meat would be lowered, and therefore the environmental damage produced by animal husbandry is minimized which can reach the purpose of reducing greenhouse gas emissions. The main threat faced by cultured meat would be the consumer acceptance of the Chinese market which is uncertain and can't be estimated until the cultured meat is massively launched to the market. As a result, the Chinese market has provided cultured meat with chances, but it has also presented some obstacles. The backing of laws and policies is obviously good news for firms producing cultured meat. Customer acceptance, on the other hand, is uncontrolled. This will be one of the most difficult issues for cultured meat in the Chinese market, and it will be an essential component in determining whether artificial meat will have a home in China. For the environmental factor, nobody can guarantee if cultured meat is better for the environment until mass production of cultured meat is happening worldwide. Pelle Sinke said depending on consumption levels, estimated energy usage for cultured meat, and the beef cattle system it was compared to, cultured meat had a larger or lower global warming effect in various scenarios. . Therefore, according to the current development scenario, cultured meat has a certain influence on environmental conservation, however, there are worries regarding this topic in terms of long-term development. The future environmental effect of synthetic meat is totally dependent on production and gas emissions.

5. Conclusion

On the whole, the benefits of cultured meat continue to exceed the drawbacks since it not only benefits customers but also helps maintain the environment for the long-term viability of our planet. This research concluded by marketing mix theory which is divided into product, place, promotion, and price. Firstly, cultured meat technology is still in the development stage. Although many companies have developed relatively stable animal cell-derived cultured meat, there are still many uncertainties. For instance, will long-term consumption of cultured meat bring bad influences on the body? This is still an unanswered question, and it will take some time in the future to prove whether cultured meat will bring a bad influence on the human body. If the cultured meat industry wants to open up the market in China for long-term development, Chinese researchers need to break through a safer and more stable cultured meat technology to increase consumer acceptance. What's more, at the moment, it appears that cultured meat has a positive environmental impact, and research reveals that cultured meat manufacturing reduces greenhouse gas emissions. But, if culture meat is mass-produced, would the greenhouse gases have been emitted during the production of meat poultry? This will also take time to verify following the widespread manufacturing of cultured meat. In terms of price, however, it appears cultural meat's price will be greater than that of actual meat at the moment due to the high cost of early research development, the cost of early cultured meat will be relatively

high. However, when the technology of cultured meat is stabilized and mass-produced shortly, the price of cultured meat will drop and become a price that is acceptable to the general public. From the perspective of promotion, when cultured meat enters the Chinese market in the early stage, promotion should start with the price element. When consumers come into a new product, consumers are not clear about the quality of the new product, the only thing that can make them tempted is the relatively low price compared with similar products to improve their competitive level. While penetrating the purchasing behavior of consumers at low prices, vigorously publicizing the technology and benefits of cultured meat, and improving consumer acceptance and purchase willingness will be the future promotion strategy of cultured meat in the Chinese market. To sum up, combined with the potential benefit of cultured meat internal factors, and the support of the Chinese government 's external factors in policies and laws, cultured meat will gain a place in the Chinese market and may become the main meat food for the Chinese in the future. Therefore, cultured meat in the Chinese market will be the new focus of China and a key turning point in the Chinese market in the next five years.

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