

# Explore the Relationship between Technological Innovation and Customer Loyalty

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**Abstract**—In the modern economic society, many factors influence people's business choices. This paper, it would discuss the relationship between technology innovation and customer loyalty. Through this research, it would be a clearer understanding of the factors that affect customers' choices, which is conducive to the company's policymaking. This paper would use qualitative analysis, such as SWOT analysis, case study. And it would take Sony as a case object. Through literature review, getting the previous research on this issue. Besides, it is also recognized that there are few previous studies on these two aspects together. So, it is a new research direction. Through analyzing Sony enterprise, Sony's advantages are strong innovation ability, being a multinational company, high customer loyalty, and strong product competitiveness. The technological advantage allowed Sony to develop relatively well for a long time. Its products meet the expectations of the public, so there is strong customer loyalty. Sony's technology innovation affects customer loyalty to a great extent. Through this study, it is understood that technological innovation is an important factor affecting customer choice. Most companies pay attention to product research and development and customer demand, customers will be favored.

**Index Terms**—Customer choose, customer loyalty, sony enterprise, technology innovation.

## I. INTRODUCTION

### A. Background

With the continuous development of technology, electronic products into thousands of families. People also have different choices for all kinds of goods. For instance, some goods line with people's living habits or interests, people may buy more this brand. Brand loyalty, according to Aaker in 1991, leads to marketing benefits such as lower marketing expenses, more new customers, and better trade leverage [1]. In increasingly competitive markets, the ability to cultivate consumer loyalty is viewed as a critical aspect in gaining market share and establishing a long-term competitive advantage [2], [3].

In the present, technology is also critical. Information technology innovation is widely established in industrialized countries; however, newly industrializing and emerging countries have been putting in place government measures to speed up information technology innovation (TI) within their borders. Under certain circumstances, product changes and iterations may have an impact on consumer decisions. Some product updates may be more in line with consumer needs.

For example, the increasing demand for clarity in photography has led to mobile phones being a more and more high definition. The same applies not only to products but also to brand choices. Besides, people who choose goods not only care about the function of this product but also pay attention to which brand the product is made by. To some extent, this reflects that people tend to choose the series of products of this brand due to their superior products. Product choice shows the degree of customer dependence. In this case, people can even choose one brand for all the related products they need to buy. Under certain circumstances, this can promote the continuous economic development of the brand.

For instance, Sony film is called "Black high technology company", customers will choose a product because the quality meets their expectations. Loyal fans of these products have also boosted the company's economic development to a certain extent. However, certain problems can also arise. At the same time, it also forces enterprises to constantly pay attention to customer needs. Because this part of the core users may also be in certain circumstances to transfer. Therefore, enterprises are forced to constantly develop their products, improve their technological content, to keep customers. At the same time, customers choose this brand not only because of product quality but sometimes because of the recommendation of friends and other subjective factors. Hence, this paper will take Song Company as an example to further explore the relationship between customer loyalty and technological innovation

### B. Research Gap

According to Jacoby and Kyner in 1973, loyalty is not random, and it is expressed over the period. It is a function of psychological processes, and it is a thought-through decision-making process with a preference for one or more alternative brands out of a collection of similar brands [4]. Customer loyalty, according to Oliver in 1999, is defined as a self-promise to repurchase or re-choose a favorite product or service [5]. And this activity, which will result in repeat purchases of the same brand or series of brands, as well as situational impacts and marketing efforts, will be ignored [5]. In the year 2000, Shankar, Smith, and Rangaswamy discovered that attitudinal loyalty is a higher-order or long-term commitment of a customer to an organization that cannot be determined simply by looking at customer repeat purchase behavior [6]. Liddy in 2000 has analyzed attitudinal loyalty is important because it indicates the tendency to display certain behaviors, such as the likelihood of future usage [7]. In 2003, Reichheld examined how likely customers are to refer a firm or a brand to their friends [8]. Julander et al. in 1997 has noticed although loyalty has been defined in various ways, there are two dimensions in

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customer loyalty: behavioral and attitudinal [9]. The behavior dimension, as defined by Bowen and Shoemaker in 1998, refers to a customer's behavior on recurrent purchases, suggesting a long-term affinity for a brand or service [10]. Repurchase likelihood is used to quantify loyalty in the behavioral sense. switching behavior or long-term choice probability [10].

From the above review, it can be easily found out that at present, some studies only focus on the relationship between company products and customer loyalty or product sales and technological innovation, but do not connect the two. This paper focused on whether customer loyalty is related to the development of science and technology. Someone out there with a handle on the social zeitgeist has determined that these items—part of the New Economy—impact readers' lives. In this context, Sony is constantly innovating its products to attract more customers, thereby increasing customer engagement. There are a lot of customers who choose Sony products and stick with them. At the same time, some customers fell in love with Sony products the first time they chose them and continue to use them. Whether it's friends' recommendation or independent choice, Sony's product innovation ability has a certain impact. This paper takes Sony as a case to further explore the relationship between customer loyalty and technological development.

These studies have looked at the question of the relationship between customer loyalty and technological innovation. Although it is mentioned that technological innovation and customer loyalty are very important for the development of an enterprise, there is little detailed analysis of the relationship between the two factors. This article, it would further discuss the correlation between product innovation and customer purchase desire by analyzing Sony's success. And set up research question as "Whether the customer chooses the product is related to the technology innovation of the product."

Now many companies try a different way to find how to make success and why the customer does not choose their goods. There are many influencing factors, but technology innovation may be the big one. If it would explore the influencing factors of customer loyalty, it will be better for the development of the enterprise.

### *C. Structure of the Paper*

To verify the hypothesis, this paper will review the relevant theories of technological innovation and customer loyalty. The research is carried out through qualitative analysis such as SWOT, case study. By taking Sony as an example, this paper conducts a comprehensive and multi-angle analysis to verify whether the hypothesis is tenable. At the same time, the research conclusions are analyzed to get better suggestions for the future.

## II. LITERATURE REVIEW

A large and growing body of literature has investigated customer loyalty and technology innovation. Continuous product innovation can affect consumer loyalty and purchase desire to a certain extent.

### *A. Technology Innovation*

#### *1) Definition*

Kostoff in 1999 said innovation in the modern field is the integration of different disciplines [11]. This cross-discipline knowledge sharing becomes more important as science and technology become more specialized. This cross-discipline information transfer becomes increasingly challenging as science and technology become more specialized [11].

#### *2) Development*

Dachyar and others in 2011 said customer loyalty is composed of customer expectation, perceived quality, perceived value, corporate image, customer satisfaction, customer trust/confidence, customer commitment, customer complaint, and customer loyalty [12]. Innovation has no direct effect on boosting customer loyalty, but it has a tremendous impact on customer loyalty through its influence on loyalty antecedents. Companies must focus on innovation efforts in order to improve customer loyalty and raise the company's worth (revenue and market share)[12].

#### *3) Effectiveness*

Knowledge and technology have increasingly been seen as strategic assets and the primary source of creating a competitive advantage, according to Yung-Lung Laia and Feng-Jyh Lin in 2012 [13]. Corporations must engage in technology innovation in order to develop unique products and services that will generate profit on the market, and successful technology innovation requires a solid foundation of knowledge resources [13].

### *B. Customer Loyalty*

Mark and others in 2002 said Customer loyalty presents a paradox [14]. Many researchers thought customer loyalty as primarily an attitude-based phenomenon.

However, empirical research shows that loyalty in competitive repeat-purchase markets is shaped more by the passive acceptance of brands than by strongly-held attitudes about them [14]. From this perspective, the demand-enhancing potential of loyalty programs is more limited than might be hoped [14].

Dachyar and Hananto in 2014 said the influence of innovation on loyalty can be demonstrated by indirect influence; quality factor, quality on customer satisfaction [15]. Furthermore, viewed from the influence of customer satisfaction to customer confidence that leads to the influence of customer trust and customer commitment. Enhancing customer loyalty, companies must give attention to gaining customers' trust committed to the mobile operator which then improved customer satisfaction by improving the quality of service and innovation of mobile operators.

## III. METHOD

### *A. Research Design*

This paper will carry out a SWOT analysis on the products of Sony enterpris. SWOT analysis is used to explore the reasons for Sony's success. SWOT stands for strengths, weaknesses, opportunities, and threats. Examining these four factors in depth will provide people with an overview of the health of organization.

**B. Sony**

In the 1940s, Tokyo Telecommunications Engineering Corporation was founded as a small company. Masaru Ibuka, the company's founder, claimed the goal was to "create an ideal factory that emphasises a spirit of freedom and open-mindedness that will contribute to Japanese culture through technology." Sony has stayed true to its original vision [16].

Sony, in full Sony Corporation, a significant consumer electronics firm based in Japan. Among other things, it was active in movies, music, and financial services.

As Tokyo Tsushin Kogyo, Ibuka Masaru and Morita Akio founded the corporation in 1946. For the following 40 years, Ibuka and Morita collaborated in what has been called "one of business history's most productive and interesting collaborations." Sony became one of the most well-known brands in the world thanks to Ibuka's product development genius and Morita's mastery of business management and marketing [16].

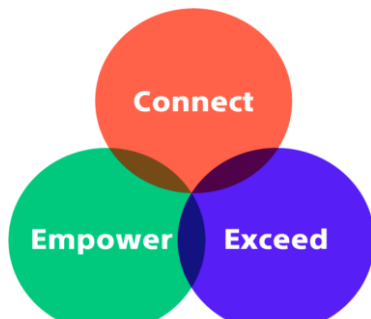


Fig. 1. Three Themes [17].

Sony's Technology 2020 is a magazine that showcases Sony's latest innovations under three themes: Exceed, Connect, and Empower (which showed in Fig. 1). Sony showcase innovations connected to image sensors under the Exceed topic, which bring up new possibilities by pushing beyond human capabilities. Then, under the Connect theme, Sony introduce the technologies that bring creators and users together and deliver kando. Finally, Sony introduce the topic of Empower with technology that let creators' imaginations to run wild, resulting in new kando forms.

Bill Baggelaar who is the senior leader of Technology Development Entertainment Innovation in 2020 said Sony Innovation Studios is focusing on some very exciting technologies in volumetric virtual production. This comes at a time when there is a clear demand for these kinds of tools and services to help production, especially with the current COVID-19 challenge. The major goal of the Technology Development department is to collaborate with internal and external partners to identify, create, and develop new technologies that may be used at the studio to drive new production, post-production, archiving, and distribution techniques. Bringing together industry partners, creatives, and various groups around Sony along with Sony's R&D Center to develop new solutions. Sony is bringing these technologies to the studio to help creators realize their vision and to deliver those experiences to customers. Sony's spirit of innovation infects every employee and brings innovative products to customers [17].

**C. SWOT Analysis**

*1) Strength*

There is a range of products. High profitability and long-term viability are guaranteed by catering to the needs of the entire market. Sony offers a wide range of consumer products and services, from home appliances to mobile phones and entertainment. Besides, Sony spends a lot of money on new product research and development, which leads them to have many patents in many fields. Sony files more than half of Japan's patents each year. In 2019, Sony filed a staggering 1,512 patents with the European Patent Office, placing it ninth in the world. Fig. 2 shows SONY's major patent allocations in the tech sector in 2019. Having enough patents is important in a technology company like Sony, which can apply more unique technologies and features to their products, which is why they can do better than other companies.

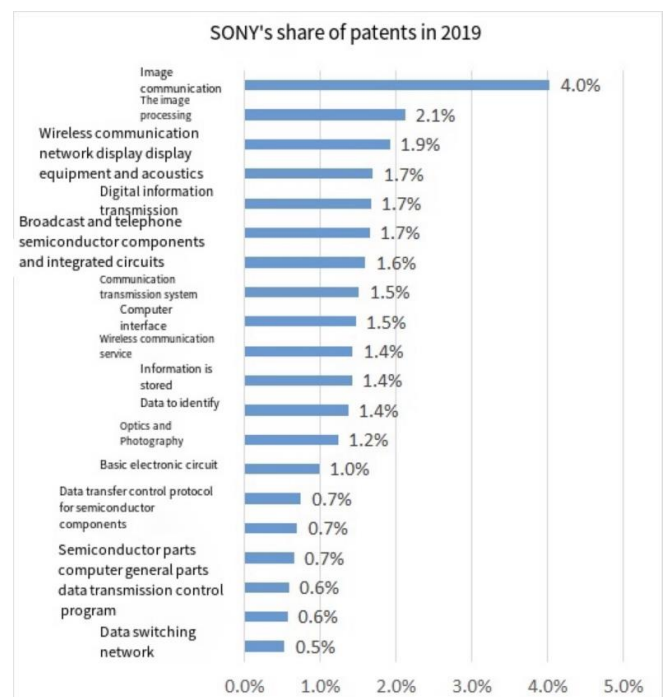


Fig. 2. Sony's share of patents in 2019 [18].

Sony has a sizable and devoted consumer following. In the 1960s and 1970s, Sony moved into the United States and Europe, and it was a big worldwide player long before most of its competitors. Since the beginning of the last century, there have been many loyal users of Sony products and they continue to this day. Besides, Sony's product community has helped stabilize many customers. For example, gamers using PlayStation have ensured that they will never even think about switching to competitors.

*2) Weakness*

Sony is primarily reliant on electronics, particularly televisions, cameras, and image sensors for smartphones. Sony's operating profits fell by 57 percent in the fourth quarter of the 2019 fiscal year due to a sharp reduction in electronic demand. Besides, Sony has few products related to the Internet of Things, such as smart furniture.

For any brand to succeed, promotion is essential. Some of Sony's products have been poorly promoted, and most people probably don't know they have a new product. Besides,

its product is not cheap, high prices have to some extent turned off some customers.

### 3) Opportunity

Sony's current concentration is on consumer devices such as music players, televisions, and gaming consoles. Many other well-known technology brands have expanded into new markets, such as home appliances. Sony has not moved into this yet. Upon entering the production of home appliances, Sony would see more opportunities to grow more and have many options.

Strengthen the promotion and allow more people, particularly young people, to enjoy their products. Young people, particularly Generation Z (born between 1995 and 2009), are the driving force behind the purchasing power market. They have grown up in a networked world and are more open to new technical items. At present, Sony's products are mostly loved by professionals, but few young people. Sony can appeal to the younger generation by lowering prices and personalizing its appearance.

### 4) Threaten

Cyber-attacks are a significant concern to Sony, especially as the company's reliance on online databases and networks grows. These cyber-attacks will affect its software revenue, such as operating systems, games, and so on. Besides, just as all industries are facing environmental problems at present, Sony's products are mainly electronic products, which will affect the environment to some extent.

## IV. RESULTS

Overall, Sony's advantages are strong innovation ability, being a multinational company, high customer loyalty and strong product competitiveness. The technological advantage allowed Sony to develop relatively well for a long time. Its products meet the expectations of the public, so there is strong customer loyalty.

But it also has some disadvantages such as its products price are too high, most products are concentrated in the electronic field, not good at product promotion. Some products are stuck in their own way and cannot adapt to the new development trend. For example, most of Sony's products do not support "Internet of Things" smart furniture equipment. These aspects would affect Sony's development to a certain extent, or even cause the company's crisis.

In the future, Sony would grow further if it comes up with smart furniture devices or caters more to Generation Z.

## V. DISCUSSION

According to the SWOT analysis and conclusions drawn, the answer to the question explored in this article is the basically same as the assumption made at the beginning of the article.

According to the literature of other scholars, most of them focus on between company products and customer loyalty or product sales and technological innovation. Through investigation, this article finds that there is a positive correlation between product technology innovation and customer loyalty. Compared with previous studies, it is a new

research angle.

There are many electronic products of Sony leading the industry in technology currently, thus attracting many customers to buy them. At the same time, in some professional areas, Sony's products have become irreplaceable status, people have to choose these products in order to work and study. For example, when making movies, people mostly choose Sony's cameras for higher resolution visual effects.

The technological innovation of Sony promotes the development of the company to a certain extent but also affects customer loyalty to a certain extent.

It seems technological innovation is an important factor affecting Sony's customer loyalty, but not the only one. Product innovation can indeed promote the development of the corporate economy, but it is not a direct factor. For example, Sony's some cameras are very high tech, but due to the high price and product publicity is not in place, its sales are not ideal. In the future, Sony should continue to strengthen technological innovation and use personalized services to attract customers of different ages.

## VI. CONCLUSION

In modern society, many factors affect customers' choices. This paper, analyze whether the customer choice of the product is related to the technology innovation of the product. Through literature review, realizing that the previous research on this issue was not in-depth. In other words, few people discussed the combination of technology innovation and customer loyalty. This paper adopts the qualitative research method, using SWOT and case study for analysis. Through analyzing Sony Corporation, its technological innovation promotes the development of the company to a certain extent but also affects customer loyalty to a certain extent. This conclusion is basically in line with expectations. Besides, technology innovation is not the only fact to affect customer loyalty. In the future, Sony should continue to strengthen technological innovation and use personalized services to attract customers of different ages.

Through this study, it is understood that technological innovation is an important factor affecting customer choice. This conclusion can be applied to the real world. For instance, the company could invest more money in technological research to get more profits. But meanwhile, this paper uses the case study method to only analyze one company (Sony), this conclusion may not fit every company. Maybe some industries' innovation can not get more profits. Therefore, the conclusions discussed in this paper may apply to most enterprises, but not all industries. In the future, more people like to choose products that are high technology and meet people's personalized needs.

## CONFLICT OF INTEREST

The author declares no conflict of interest.

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