Effects of Digital Ecosystem and Partial Knowledge on Brand Loyalty in the Smartphone Industry

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ABSTRACT
Smartphones have become an essential tool and a common product since the 2010s. Despite being a type of electronics, its rather shorter life-cycle and more frequent upgrades makes its marketing a valuable topic to research on. This study provides two particular angle, which are digital ecosystem and brand loyalty, discussing about their concepts and applications, and finding their positive relationships with brand loyalty through analyzing survey data.

Keywords: *smartphone market in China, tech product marketing, digital ecosystem, bias, brand loyalty*

1. INTRODUCTION

Since the introduction of iPhone in 2007, which groundbreakingly adopts multi-touch technology as its primary controlling method, smartphones have evolved into an essential tool for computing and communication and a key means to engage in social activities. In China, more than 99% of its Internet users choose smartphone as an Internet access device, and there is over a billion mobile netizens, covering more than 70% of China's total population [1]. A considerable amount of attention and interest is driven towards mobile applications, as they are regarded as solutions to satisfy the needs in various aspects of personal life, including well-being [2], sociality [3], productivity [4], entertainment [5], etc.

1) Smartphone is a unique item among consumer products for multiple reasons, including but not limited to:

2) Smartphones are currently dominant to the digital lifestyle, especially in China, as is discussed above;

3) Despite being categorized as a shopping product, smartphones' evolution is more appreciable compared to other computing devices like desktops, with new functionalities enabled and promoted every year;

4) Smartphone has always been a widely discussed topic on the Internet in the past years [6];

Consumers tend to upgrade their phones more often than PCs [7][8], which means brand loyalty becomes more important with smartphones than with PCs.

Then, for its increasingly crucial role in modern life and unique features as a product, smartphone has become an important subject of marketing research[9]. This study focuses on two strategies and discusses their contribution to smartphone brand loyalty through qualitative analysis and case studies, one being digital ecosystem and the other being biased knowledge. This paper also analyzes the relationship between market factors and brand loyalty, and discusses their possible applications.

2. DIGITAL ECOSYSTEM

2.1 Background

The concept of a digital ecosystem was developed as early as in the 2000s [10], and was applied in product development for both businesses and individual consumers, the latter being the clients this study focuses on. For a consumer, a digital ecosystem refers to a combination of multiple hardware, software or services that work together as a coherent solution to its digital lifestyle. Hardware components of a consumer digital ecosystem include but are not limited to smartphones, PCs, tablets, smart watches and peripherals such as displays and speakers. Either of the following two ways contributes to one's own digital ecosystem. One is, the user may possess at least two different types of devices that can communicate with each other, whether directly through wired or wireless connection, which requires software and hardware components based on a unified standard, or through several relay components, which may be remote services (e.g. Internet connection, cloud

Y. Jiang et al. (Eds.): ICEDBC 2022, AEBMR 225, pp. 1324–1329, 2022.
https://doi.org/10.2991/978-94-6463-036-7_195

service. The service provider may or may not be the same provider of hardware or software in your ecosystem) or hub devices that also belong to that said ecosystem. The other is, the user may possess only one device, but they should rely on a number of services that work in consistency with each other. Those services may even be optimized or have exclusive features for the software environment on the user's very device.

A number of major tech companies have been taking digital ecosystem into consideration for their product strategy, such as Apple, Microsoft, Amazon, and Meta. It is seen as an increasingly important factor in digital product marketing. [11]

2.2 Example cases

Several major technology companies have been developing their own consumer digital ecosystem as a complete product strategy, aiming to enhance user experience and increase brand loyalty.

Apple introduced 'continuity' in 2014, which is a series of features that enables seamless transition of workflow among Macs, iPhones and iPads. Apple Watch requires connection to iPhone to activate, and AirPods' configuration settings and software UI are only available when using Apple devices.

Google has been running a large variety of consumer services, including cloud synchronization & storage, productivity applications, information services, etc., enabling a user to manage its digital lifestyle with one account, while ensuring that they work consistently with Google software such as Android and Chrome OS.

Xiaomi has been working with a large number of home electronic appliances manufacturers to integrate their products into its Mi Home IoT platform, and Mi Home has become the smart home platform with the largest user base. [12]

2.3 A Two-Part Study on the Effects of Digital Ecosystem

To examine the relevance between digital ecosystem and brand loyalty, two surveys were conducted among Chinese consumers via a survey agency. Data was analyzed to extract traits of this customer base. To ensure representativeness, the respondents are totally random except they are required to be no less than 14 years old.

2.3.1 Study 1: Preliminary Survey

A preliminary survey questionnaire acquired customer information on current brand possession, satisfaction level, whether they would like to learn about and even consider to switch to other brands, and why. 216 valid submissions (125 female) were collected and analyzed. Respondents have an average age of 32.08 (standard variance = 9.71).

In this study, 104 respondents say they will not consider switching their phones to another brand. What is interesting is 41.35% of them mentioned that the difficulty of transitioning to another digital ecosystem was one of the key reasons that they are reluctant to switch. This implies that digital ecosystems do help establish brand loyalty. by providing better user experience, but may also make customers more submissive to staying because that either they are accustomed to their current ecosystems, or the transitioning process is rather complicated for normal users.

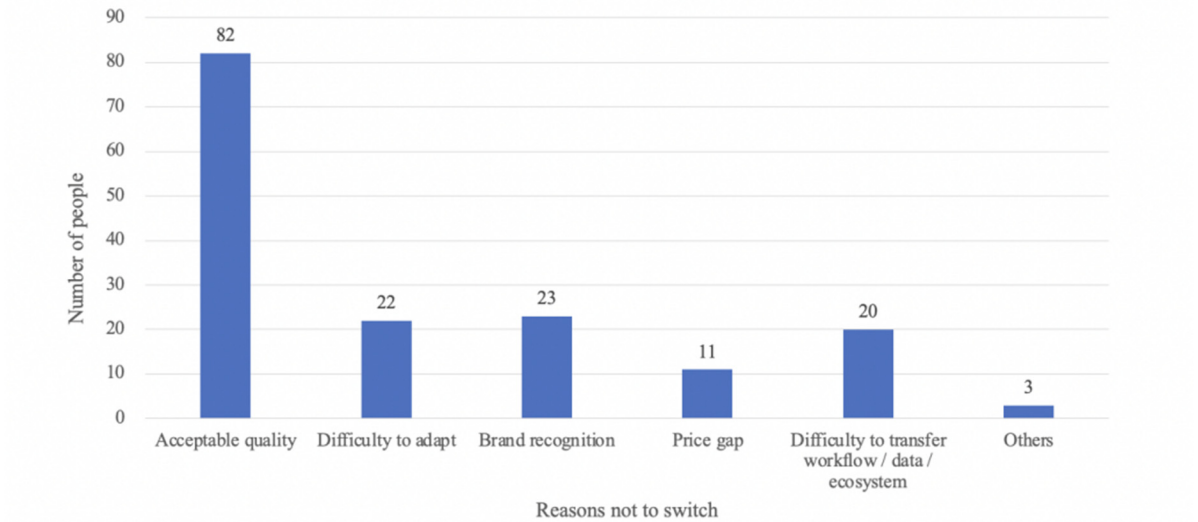

Figure 1. Reasons why customers refuse to switch brands.

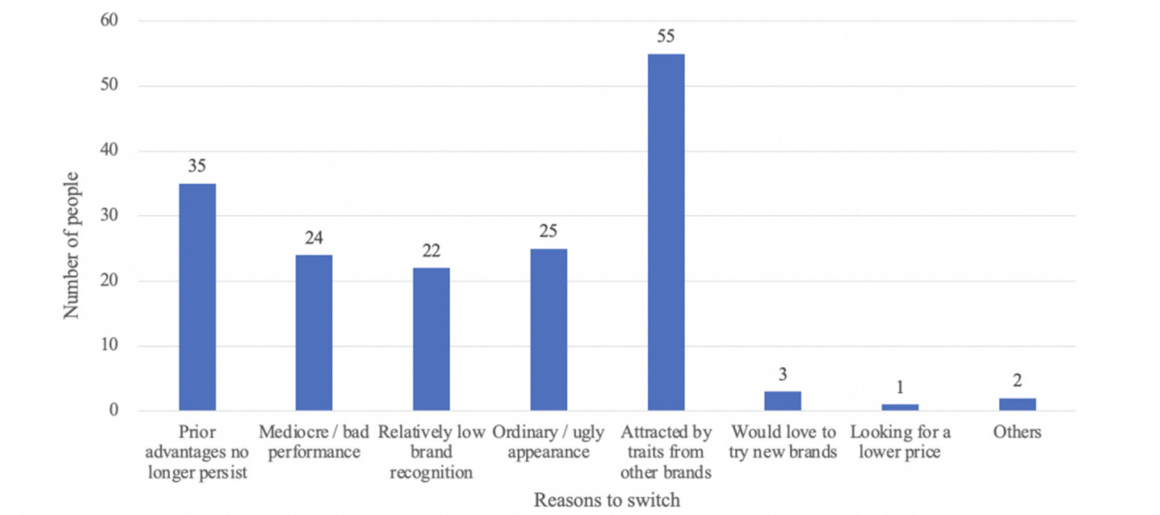

Figure 2. Reasons why customers decide to switch brands.

2.3.2 Study 2: Follow-up survey

To further explore the relationship between ecosystem and loyalty, another survey was conducted through the same agency. There were 161 respondents (86 female), with the average age of 32.98 (SV=10.37). They were first asked a series of questions regarding their experience of digital ecosystem, while these questions also gave them an impression of the concept of it. Then they were asked whether they would consider to switch brands, and those who answered no are asked if it because of the ecosystem. Those are all binary (yes / no) questions except the last one, which also asked the respondents whether ecosystem is a benefit or an obstacle that keeps them from switching.

The study shows extremely surprising results, as is shown in Figure 3. First, it's shocking to find that only 4 respondents do not have a ecosystem experience. Although it means that a correlation test between ecosystem and loyalty will not be considered valid in this study, it does reveal that the experience of ecosystem has been extremely popular. Then, among the 94 people who do not plan to switch, 92.55% of them think that the ecosystem a factor not to switch, and 89.66% of these people think positively of it. This means digital ecosystem tend to be a bonus instead of a barrier, its positive effect of satisfying customers' needs is much more significant than the negative effects.

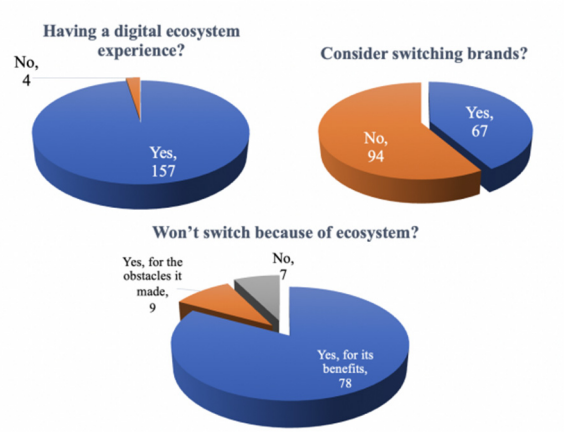

Figure 3. Survey results of customer's brand loyalty (upper right), experience (upper left) and attitude (lower) towards ecosystem in Study 2.

2.4 Discussion

This study finds that building a digital ecosystem contributes to maintaining customers' loyalty to smartphone brands. The overall positive attitude of customers towards it also suggest that this could definitely serve as dedication factors for boosting loyalty in the model presented by Lin et al. [13] However, it can also add to constraints such as inertia and switching cost, since switching involves the cost of adjusting to new interfaces, purchasing new companion products, or completely transitioning to a new ecosystem.

It should be addressed that this finding does not only mean that smartphone manufacturers should provide a unified and smooth experience with their range of products. It also means that to increase customer loyalty from a user base of a certain platform, software developers and service providers should craft their products to provide optimized experiences that coordinate well with the platform.

3. BIASED KNOWLEDGE

3.1 Background

If a consumer purchasing for a smartphone brand is satisfied to a certain extent while also under the influence of status-quo bias and cognitive lock-in, they will be more likely to stick to their current brand [14]. Those influences could be created by biased knowledge of the overall industry. Here it is defined that customers Tech products like smartphones are constantly upgrading, so it would require quite an amount of time and effort to learn to operate. However, most companies have their unique ideals in product design to differentiate from competitors, and that means there is an unneglectable learning cost for every brand. Therefore, to minimize learning cost given a limited budget of time and effort, most users may tend to learn more about the brands they own and less about others.

It is also possible that a user may have got a bad first impression from using one brand so the person has switched to another. This kind users may be reluctant to follow updates on the previous brand even if the issues they met have been fixed for years. A classic case is the competition of phones running two operating systems: iOS and Android. iOS phones (i.e. iPhones) have been criticized for its insufficient battery life, conservative upgrades of camera specs, highly restricted access to file systems, lack of useful features such as scrolling screenshots, etc. At the same time, Android (and its derivatives like MIUI) is also regarded to have higher privacy and security risks, mixed hardware quality, higher complexity of management, and shorter lifespan of software support, etc. Both have improved a lot in recent years, but stereotypes stay among some customers.

3.2 Findings in Study 1

In Study 1, respondents are also asked if they would seek new information or even try on the latest products of their own brands or other brands. They are divided into four classes based on their claims:

1) The “Know-It-All”s: People who try to be well informed on both their own brands and the remaining brands;

2) The “Indifferent”: People who have very limited knowledge of both their own brands and the others;

3) The “Biased”: People who pay much attention to their own brands but are not interested in other brands;

4) The “Mental-Switchers”: People who learn a lot about other brands, but have little idea about information on their own brands.

The 4th type of customer may seem unusual, and this group is a minority of customers, but the results (demonstrated in Figure 4) show that this group is as significant as other group, thus it cannot be neglected. This study was not planned to find the exact reason for this, but in this study they are named “Mental-Switchers” because among these customers a) everyone who wants to switch says they are attracted by other brands, or their current brands have become less competent compared to others; b) half of those who do not plan to switch mentioned the difficulty in switching because of passive factors such as price gaps, ecosystem barriers, and lack of access to distribution channels.

Then, the respondents are asked if they would consider buying phones from another brand for their next purchase to examine their loyalty. Figure 4 shows a comparison of brand loyalty rate among those four types of customers. Notice that the “Biased” has a significantly higher loyalty rate. This implies that biased knowledge can have a positive relateship with customer loyalty.

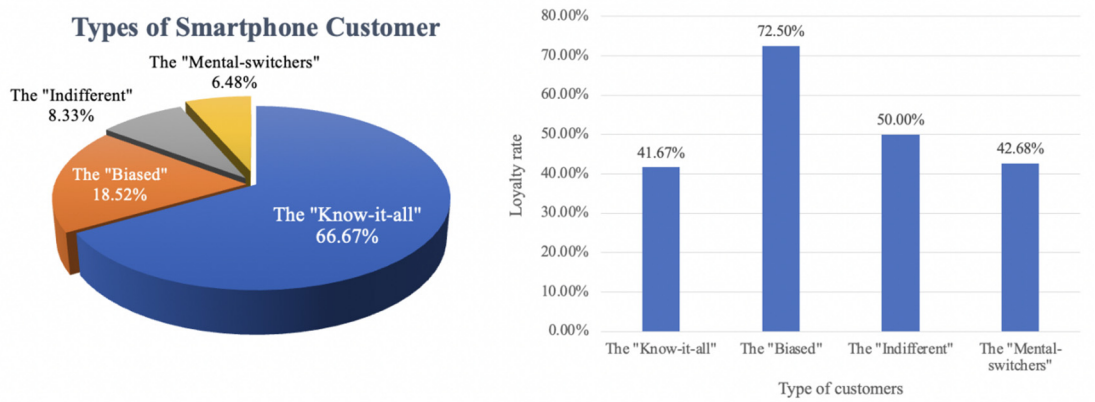

Figure 4. Types of smartphone customer (left) and comparison of loyalty rates of each type (right).

3.3 Discussion

Smartphone customers that are less interested in brands they do not own will be less likely to learn about their advantages, and this study shows that this biased knowledge can prevent customers from changing their brand preferences. It may serce as a constraint factor by contributing to status-quo bias and cognitive lock-in

[13][14]. It is suggested that more research and experiments be conducted to further prove the relationship, such as experiments on whether mitigating the bias (by means such as providing information) can reduce the group's loyalty rate to a normal level.

Many smartphone companies such as Samsung, Apple and Huawei have been running flagship retail stores to provide customers a hands-on experience with their latest products, which is an efficient way to inform customers of their products. This can provide sufficient knowledge to mitigate knowledge gap. Another possible approach is to design informative advertising for potentially new customers. Currently, when big data plays an increasingly important role in advertising [15], this kind of targeted advertising can be much more effective.

4. CONCLUSION

This study analyzes the relationship between the digital ecosystem and prejudice knowledge with brand loyalty in the smartphone industry by expounding on the concept of the digital ecosystem and prejudice knowledge. Digital ecosystem is related to the increasing satisfaction, inertia and switching cost, while biased knowledge mainly contribute to status-quo bias and cognitive lock in. It also discusses possible applications for smartphone's marketing and product strategy.

As this study does point out the relevance with those factors by data collecting, it does not look for causal relationships with experiments. Future studies on this subject may focus on experiments to further investigate this matter.

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