Do Network Externalities Increase Customer’s Recommendation to Others? Empirical Comparative Study of Luxury and Necessity Products?

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Abstract. Network externalities are an important way for firms to gain competitive advantage. Based on the theory of network externalities, this paper empirically compares the effects of network externalities on customer recommendation between luxury and necessity products. To verify the hypothesis, data from 539 consumers were collected. The empirical results showed that for both luxury and necessity products, direct network externalities have a positive impact on customer recommendation, while indirect network externalities have a negative impact on customer recommendation. This study extends the theory of network externalities and offers some practical implications.

Introduction

The past few decades have seen an explosion of experiment and insights into network externalities. Many scholars have explored the relationship between network externalities and product performance. A common finding from these studies is that network externalities positively related to performance. For example, direct network externalities have a positive impact on long-term new product performance, while indirect network externalities have a positive impact on short-term new product performance [1].

In addition to postulating how network externalities may enhance performance outcomes, recent work also highlights the possibility that network externalities actually may detract from firm performance in some situations. For example, Zhou and Lu (2010) found that direct network externalities have no effect on customer satisfaction and perceived enjoyment [2]. Song, Parry, and Kawakami (2010) argue that network externalities have no effect on customers' willingness to pay [3].

Recent work, then, suggests a complex and even contingent role for network externalities in firm performance. There are needs for additional research to examine the relationship between network externalities and firm performance. Using customer recommendation as a proxy to firm performance, the aim of this study is to explore whether network externalities enhance a firm's performance. In addition, the study investigates whether two product category (luxury and necessity) moderate the relationship between network externalities and customer recommendation.

Theoretical Background

Network Externalities

The concept of network externalities were first proposed by Rohlfs (1974) [4]. Rohlfs found that when new users choose the telephone network, they are more willing to join the network with more original users. After that, Katz and Shapiro formally defined network externalities in 1985 [5]. According to their definition, network externalities refers to the phenomenon that when the number of
users using the same product or service increases, the utility each user obtains from consuming the product or service also increases.

Network externalities is divided into two dimensions: direct network externalities and indirect network externalities. Direct network externalities refer to the increase of consumer utility directly caused by the increase of the number of consumers consuming the same product. Indirect network externalities mean that with the increase of the number of users of a product, the number of complementary products of the product increases or the price decreases, thus making consumers more willing to buy the product and indirectly increasing the value of the product.

**Luxury and Necessity Products**

Luxury has been defined in different ways by researchers. Defined from an economic perspective, luxury products are products with “functional value” lower than “price” ratio and “tangible value” lower than “intangible value” ratio [6]. Defined from a sociological perspective, luxury represents beautiful things, luxury is not only a pure item, but also a synonym for high taste [7]. From the perspective of purchasers, luxury products are products that can enhance the social status and reputation of purchasers [8].

Scholars have conducted a large number of studies on the determinants of luxury products purchase. In general, luxury purchase motivations can be divided into two categories: Social orientation (such as showing off, conformity and uniqueness) and personal orientation (such as hedonism, self-gifting and quality assurance) [9,10].

Compared with luxury products, necessity products have the following characteristics. Necessity products are the indispensable commodity in our daily life, such as food and clothes. The price of necessity products is relatively low. Moreover, necessity products are universal and practical, people pay more attention to their practicality, quality, price and promotion methods when making a purchase.

**Hypotheses Development**

This paper argues that network externalities has a positive impact on customer recommendation for the following three reasons. First, network externalities have an impact on customer attitudes and behaviors. For example, network externalities will increase increase customers' perceived switching costs [1] and have an impact on customers' continuous intention [11], behavioral intention [12], payment intention [3] and loyalty [2]. Second, existing studies have shown that network externalities have an impact on the survival of pioneers [13] and the new products performance [3]. Third, some consumers buy luxury products for the purpose of conformity [9]. In order to gain group identity, they keep up with the pace of the public and buy luxury products of the public leather brand. The type of luxury products used by people around them will have a huge impact on their purchases [14]. Therefore, we propose:

Hypothesis: Network externalities are positively related to performance.

**Research Design**

**Data**

Data on purchase behavior decisions were collected from 539 customers of luxury and necessity products (244 luxury purchases and 295 necessity purchases). The product categories included 114 lap computers (21.15%), 96 handbags (17.81%), 102 phones (18.92%), 98 travel products (18.18%) and 129 financial related products (23.96%). The age of the customers ranged from 18 to 48, with an average age of 32 years old. The respondents’ education levels are: 84 graduated from high school (15.58%), 191 with college degree (35.44%), 97 are master's degree holders (32.65%), and 88 have doctor's degree (16.33%). The average monthly income of all respondents was 16,651, with a
maximum of 50,848 and a minimum of 1,018. Respondents bought an average of 23 products in the past three months, with a minimum of 7 products and a maximum of 40 products.

**Study Measures**

We measured network externalities using scale items from Katz and Shapiro (1985) to assess direct network externalities and indirect network externalities [5]. The three items of the direct network externalities rated whether or not almost everyone is using similar types of products and services, the percentage of people using similar types of products and services, the number of people using the products and services from this company. The indirect network externalities scale had three items concluding number of related complemenal products and services in the market, availability of related complemenal products and services in the market, and affordability of related complemenal products and services in the market.

Customer recommendation was used as a proxy to performance. The measure is: how likely are you to recommend this company’s products and services to a friend or relative? (1 = 0% chance; 7 = 100% chance).

**Results**

The regression results are shown in table 1. The empirical results indicate that for both luxury and necessity products, direct network externalities has a positive impact on recommendation, indicating that hypothesis is supported (p<.05). Counter to the hypothesis, indirect network externalities has negative effect on customer recommendation.

Additional analyses were performed to evaluate differences between luxury and necessity products. For the direct network externalities, there was no significant differences between the two product categories. However, for the indirect network externalities, the difference is significant, indicating that the indirect network externalities has a stronger negative effect on customer recommendation for necessity products than for luxury products.

<table>
<thead>
<tr>
<th>Customer Recommendation as Dependent Variable</th>
<th>Luxury (n = 244)</th>
<th>Necessity (n = 295)</th>
<th>Parameter Estimate Difference Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>4.061***</td>
<td>7.034***</td>
<td></td>
</tr>
<tr>
<td><strong>Direct Network Externalities</strong></td>
<td>0.353***</td>
<td>0.278***</td>
<td>L &lt; N (p = 0.486)</td>
</tr>
<tr>
<td><strong>Indirect Network Externalities</strong></td>
<td>-0.359***</td>
<td>-0.635***</td>
<td>L &gt; N (p &lt; 0.05)</td>
</tr>
<tr>
<td><strong>Monthly Income</strong></td>
<td>-0.013</td>
<td>-0.201</td>
<td></td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td>-0.099</td>
<td>-0.022</td>
<td></td>
</tr>
<tr>
<td><strong>F-value</strong></td>
<td>11.27***</td>
<td>23.73***</td>
<td></td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.159</td>
<td>0.247</td>
<td></td>
</tr>
<tr>
<td><strong>Adjusted R²</strong></td>
<td>0.145</td>
<td>0.236</td>
<td></td>
</tr>
</tbody>
</table>

Note: ***p<0.01. In parameter estimate difference test, L represents luxury products and N represents necessity products.
Conclusion

There are two conclusions in this paper. First, direct network externalities and indirect network externalities have different effects on customer recommendation. Direct network externalities have positive effect on customer recommendation while indirect network externalities have negative effect on customer recommendation. Second, indirect network externalities have different degrees of influence on luxury products and necessity products and have greater influence on necessity products.

This paper has some managerial implications. On the one hand, marketing firms of luxury products and necessity products should try their best to expand the scope of application of products and increase the number of users. On the other hand, companies should reduce the number of complementary products of related products. For example, clothing stores selling suits should reduce the number of matching ties.

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