A Test of Search-Experience-Credence Framework Through Online Review

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Abstract

In a traditional shopping environment, Search-Experience-Credence (SEC) framework has been widely used for consumer advertising research. In online shopping, online reviews are used by the consumer to check against claims in advertising as well as more in-depth product research. The SEC quality of a product influences the online review volume as well as helpfulness votes it receives. In this study, we tested the nomological validity of the SEC-framework by analyzing the number of reviews and helpfulness votes collected by a product, which demonstrated a significant difference for goods with differing SEC qualities. This study helps us better understand how and to what extent online reviews are used by consumers to evaluate products and services in different SEC categories. The preliminary findings fully support our hypothesis.

Keywords

Search, experience, credence, online reviews, product rating, quality evaluation.

Introduction

Depending on when and to what extent a consumer could evaluate advertising claims for product quality, consumer products and services could be classified into three categories: search, experience, and credence goods (Darby and Karni 1973; Nelson 1970, 1974). In general, a consumer could evaluate search qualities before purchase or evaluate experience qualities after using them (Nelson 1970, 1974). The examples of search qualities could be the style of cloth or outlook of an electronics. The examples of experience quality could be the taste of a can of tuna or featured dishes of a restaurant. A consumer may not be able to evaluate credence quality even after using it (Darby and Karni 1973), such as auto repair or medical services, because lacking related technical expertise. SEC framework is a proven framework and has been critically examined and verified in traditional shopping environment (Ford et al. 1988).

Online reviews are considered an essential category of user-generated content and they are instrumental and critical in B2C and O2O environment (Chen and Xie 2008; Doh and Hwang 2009). Existing research found online review could not only increase sales (Chevalier and Mayzlin 2006) but also enrich user experience (Nakayama et al. 2010). Online review is especially important for the sales of niche product compared with popular product (Zhu and Zhang 2010). Good online reviews could provide so-called virtual experience for online products with search and experience qualities (Jiang and Benbasat 2004).

There are complex interactions between a product's SEC quality and its online reviews. On one side, the product SEC quality may influence the number of online reviews it receives by limiting or expanding consumers' online shopping experience (Wan et al. 2010). On the other side, online reviews may reduce or

even eliminate the difference between search and experience quality attributes in online environment thus change a product's SEC quality distribution (Huang et al. 2009).

Thus, we hypothesize a product's specific SEC attributes distribution has corresponding online review patterns. By discerning such patterns, we would be able to 1) test the nomological validity of the SEC-framework in the online environment, and 2) detect lemon products based on their review and vote patterns that are inconsistent with their categorical norms.

Literature Review

The SEC Framework

Nelson (Nelson 1970) and Darby and Karni (Darby and Karni 1973) first proposed that consumer are aware that advertisers would exaggerate or mislead product or service information to persuade them making the purchase. As a result, consumers tend to be skeptical about advertisement and would assess the claim with available information (such as WOM or eWOM). Thus, depending on the assessment difficulty, we could classify product attributes into search, experience, or credence qualities.

The SEC framework is a proven in the traditional shopping environment. For example, three researchers used the degree of consensus of independent judges to classify SEC qualities and found that experience qualities received the highest unanimous agreement (69%), then were search (59%) and credence (46%) qualities (Ford et al. 1988). Another study examining the SEC framework in the context of perceived risk, information search, and purchase intention in service sector found that perceived risk increases along a continuum from search to experience to credence service purchases (Mitra et al. 1999).

In the online shopping environment, it was found multimedia technology enabled virtualization technique could be used to compensate users' inability to assess search and experience qualities (Huang et al. 2009). In other words, in the traditional shopping, consumers could evaluate search quality but cannot assess experience quality before purchase. However, in online shopping, consumers could determine both search and experience qualities but in an indirect manner.

Online review

Online review as an eWOM could efficiently reduce perceived product risk when consumer make online purchase decision (Weathers et al. 2007). It is routinely used by online shoppers to conduct product research or making purchase decisions. It is one of the most important sources for online shoppers to evaluate the credibility of advertising claims.

In the tradition environment, consumers could always examine the search quality of a product before making the purchase or consuming the goods, which differentiate it from experience qualities. In the online shopping, consumers have no access to search properties of specific goods. Thus, like experience quality, consumers have to depend on eWOM or virtualization technologies (Huang et al. 2009). In other words, the boundary between search and experience qualities are blurring in online environment. Though the boundary is blurring, their review helpfulness features could be different. The credibility of search quality is mainly determined by the level of detail in a review while the credibility of experience quality is mainly determined by reviewer agreement. It was also found that reviewer agreement affects purchase intention of search and experience products (Jiménez and Mendoza 2013).

The credence quality is still difficult to assess in online shopping because consumers usually do not have the expertise to evaluate even after the purchase. Probably because of this, studies found reviews of experience goods are considered more trustworthiness than credence goods in the online environment (Pan and Chiou 2011). However, the sheer size of the consumer base in online portals like amazon.com increased the chance of having consumers with the expertise to assess credence quality. When the consumer base reaches critical mass, credence reviews would be most likely created and are most likely considered very helpful once they win over the trust of viewers (Grabner-Kraeuter 2002).

Hypotheses

Because search and experience products are easy to evaluate, consumers are more likely to post reviews at the initial stage of product life cycle. Credence goods are difficult to evaluate. Consumers tend to spend more time to evaluate them before they could post a review. As a result, for the same period, there is on average much less number of reviews received by credence goods. Thus, we have H1:

H1: Search and experience goods on average receive more reviews than credence goods in the early stage of their market release.

Because statements in reviews about search and experience goods are easy to evaluate, consumers are more likely to vote on review helpfulness. As a result, early posted helpful reviews tend to receive more votes and, due to Matthew effect, they are more easily to stay as the top helpful reviews (Wan 2015). The credence qualities of goods are hard to assess and reviews are less available initially and tend to be more available over time. Thus, the votes received by credence goods are following similar pattern. So we have H2:

H2: Search and experience goods tend to receive more votes for reviews on average but are declining more rapidly than those of credence goods over time.

All SEC goods receive more reviews overtime and would have more different opinions on their helpfulness. Thus, the overall trend for helpfulness votes ratio are declining. However, the scarcity of helpful review for credence goods and the difficulty to assess such claims let consumers more likely vote due to trust. It is less likely to vote against a credence claim due to verifiable disagreement like for search or experience goods. This makes the overall helpfulness ratio tend to be higher than those of search and experience goods, so we have H3:

H3: Helpfulness votes ratio for credence goods declines much slower than those of search and experience goods.

Data Collection

For this preliminary analysis, we used a review dataset obtained in August 2012 from amazon website. They are printers (HP and Epson) with dominant search qualities, Music CDs (Adele and Slipstream CDs) with dominant experience qualities, and health product (Coconut oil and Opti-men Multivitamin) with dominant credence qualities. They were top selling products in their respective category when the data was collected and could be considered as representative products in their category.

Finding from Sample Dataset

We extracted review and votes data from sample dataset and the summary statistics is in Table 1. The average monthly review volumes in table 1 indicated the two experience products and two search products received 10 to 30 times more reviews than the two credence quality goods during the first 10 months. Thus, H1 is supported.

|		Average monthly review	Average monthly Yes/Total votes	Votes/Review Ratio and Votes Beta	Yes/Total votes ratio and Beta
Search	HP Printer	19.1	122.7/141.6	7.41/-45.08	0.87/-0.035
	Epson Printer	15.1	115.6/132.2	8.75/-29.6	0.87/-0.018
Experience	Adele CD	52.2	214.2/396.7	7.60/-34.86	0.54/-0.021
	Slipstream CD	21.8	61.4/90.2	4.14/-77.6	0.68/-0.1
Credence	Coconut Oil	1.5	96.4/104.3	69.53/0.897	0.92/-0.005
	Opti-men Multivitamin	2.1	12.3/18.5	8.81/-0.459	0.66/-0.002

Table 1. Summary Statistics for Sample Dataset

There is also one explicit trend in review volume linear trendlines (the *dotted lines in Figure 1*): goods with dominant experience qualities received decreasing number of reviews, while goods with dominant credence qualities receiving increasing number of reviews. Trendline coefficients of two experience goods and two credence goods are -4.5 and 0.9181 respectively. This is consistent with our analysis in the hypothesis section.

The two search and two experience products received an average of 328 Total votes and 243.5 Yes votes in their first three months and 190.2 and 128.5 in the 10-month period of time, the former consists of 55% of total votes and 60.5% of the latter period. This concentration of votes on early reviews was also observed in Wan (2015). Though search and experience goods received more votes than credence goods, the votes they received decline rapidly with a beta from -77.6 to -29.6, decline much faster than the two credence goods (0.897 and -0.459). It should be noted that the votes received by coconut oil increase over time, consistent with increasing number of reviews. Thus, H2 is supported.

The beta values for helpfulness votes ratio of all SEC goods are negative, which indicated declining overall helpfulness consumers feel about reviews (Figure 2). However, the two search and two experience goods have a beta ratio ranging from -0.018 to -0.1 with an average of -0.0435, which is more than 12 times in scale than the two credence goods (-0.002 and -0.005 with an average of -0.0035). Thus, H3 is supported.

Figure 1 and Figure 2 are two representative search/experience (Adele CD) and credence (Coconut oil) goods review and helpfulness ratio fluctuation trend. It is relatively easy to visually compare their distinctive patterns.
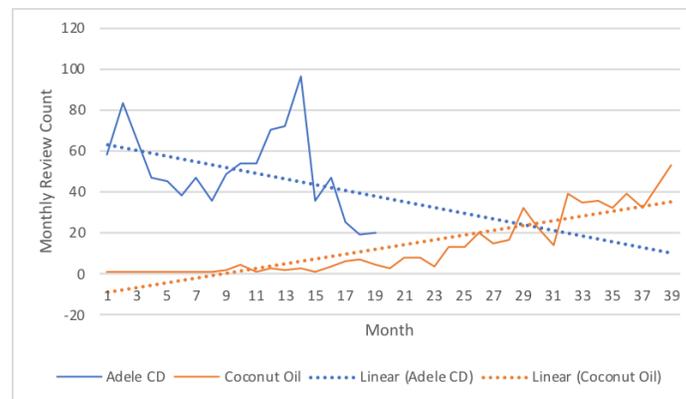
Figure 1. A Comparison of Monthly Reviews Counts
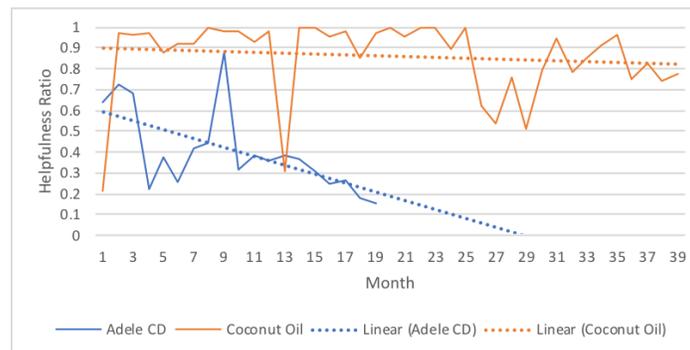
Figure 2. A Comparison of Helpfulness Ratio

Conclusion

In B2C online shopping environment, products with dominant search, experience, or credence qualities would have distinctive online review volume and yes/total votes fluctuation patterns. Products with dominant search/experience qualities, such as a newly released Adele CD, tend to receive large volume of

reviews and votes at the beginning of their life cycle but the declining trend also kicks in quickly. In contrast, products with dominant credence quality, such as the health effects of coconut oil, tend to receive fewer review and votes volumes at the beginning but would last longer and receive relatively more helpful votes over time. More details of this phenomenon would be explored with comprehensive dataset and its implications to be investigated in the next step.

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