

Research of the B2B Consumers Behavior of the Lighting Industry in the U.S. E-commerce Market

Ziyang Diao^{1,*}

¹ Warren College, University of California San Diego, San Diego, 92093, USA

*Corresponding author. Email: zdiao@ucsd.edu

ABSTRACT

The past decade has been a booming decade for the North American e-commerce market. E-commerce is gradually becoming more and more accepted as an alternative to store retail, especially in the lighting industry. Using the case study and comparative analysis method, this paper mainly explores the current consumption habits of B2B consumers in the lighting industry shown in the current development of Internet e-commerce. Exploring the findings of this paper can guide the marketing of suppliers, increase their conversions, and better help the development of the North American lighting industry. It will provide generalized customer behavior analysis and forward-looking marketing points for suppliers who have not been exposed to but are ready to reach the B2B consumers segment in the North American lighting industry.

Keywords: U.S. E-commerce Market, Lighting Industry, B2B, Consumers Behavior

1. INTRODUCTION

1.1. Research Background

The past decade has been a booming decade for the North American e-commerce market. E-commerce is gradually becoming more and more accepted as an alternative to store retail, especially in the lighting industry. E-commerce in the lighting industry grew by 18% per year between 2012 and 2018. The total volume of the e-commerce lighting industry, worth about 9.1 billion dollars, contributed to 7% of total lighting market sales [1]. New marketplaces, such as Wayfair and Overstock, and the surge in demand for home lighting due to the Work-From-Home revolution have allowed local lighting companies to reach consumers nationwide, even international scale. Cross-state, cross-country sales are no longer the prerogative of lighting industry-leading enterprises such as Philips and General Electric. Many regional lighting companies are growing into national retailers and wholesalers. Their brands are becoming better known and recognized by customers, such as TorchStar Lighting and Sunco Lighting. Now, consumers have more choices and a significant change in their spending habits.

However, as a subset of the consumer group, B2B consumers are fundamentally different from general B2B

consumers in buyer attraction, satisfaction, and retention [2]. Under the influence of society, economy, political, and environmental changes, B2B consumers show different consumer behaviors and trends from those of B2B consumers.

B2B consumers spend 20 hours researching before contacting a sales rep. B2B consumers expect suppliers to make a variety of efforts to optimize the online shopping experience, including: 45% want personalized portal content, 44% are looking for easy-to-use ROI (Return on Investment) calculators, 38% are seeking A.R. (Augmented Reality) options, and 33% want video chat options [3]. According to a survey conducted by Isoline in 2019, 53% of B2B decision-makers say video is the most useful form of content, followed closely by case studies [4]. While the sales funnel was very simple, 90% of B2B buyers now enter, exit, and re-enter the funnel at different times [5]. Up to 80% of B2B purchase decisions are based on the buyer's direct or indirect customer experience, and only 20% are based on price or the actual product. [2]

Because the user base of B2B consumers in the lighting industry is small, it does not account for a high proportion of the overall lighting e-commerce market. It is more difficult to obtain data and information, so few scholars have studied their user behavior. However, B2B consumers have high average sales per order and low

fulfillment costs for suppliers, and they have the advantages of predictability and repeat buying habits. This paper will mainly explore the current consumption habits of B2B consumers in the lighting industry shown in the current development of Internet e-commerce. In addition, this paper expects that the findings of this paper can guide suppliers' marketing, increase their conversions, and better help the development of the North American lighting industry.

1.2. Literature Review

In "Attracting and Retaining Online Buyers: Comparing B2B and B2C consumers", Eileen et al. analyze the behavioral characteristics of B2B consumers across the industry from a business perspective. They argue that all B2B consumers might be expected to evaluate certain product attributes, particularly as their needs depend on planned applications of the product. B2B consumers are more interested in obtaining specific details, such as delivery time and pricing options. In addition, due to company policies, B2B consumers may require documented quality assurance and after-sales support. Other features that may be important include pre-sales consultation and support, post-sales field service availability, and product replacement options. In addition, Eileen and co. explored the characteristics of B2B consumers in terms of the buyer-seller relationship. B2B consumers tend to buy in larger volumes than B2C consumers, while suppliers tend to have fewer B2B consumers than B2C consumers. Thus, marketing strategies facing B2B consumers need to be customizable and interactive instead of universal and singular. The final purchasing decision might result from protracted negotiations, including reciprocal terms, exclusive terms, or lease terms; thus, they are more complex than general B2C consumer purchases. [2]

In "Customer behavior in electronic commerce: The moderating effect of e-purchasing experience", Blanca et al. discuss how purchasing experience on e-commerce consumers influences decision making. They examined the different determinants of acceptance, intention, and application exhibited by first-time and experienced buyers through a laboratory experiment. They concluded that companies competing in the e-commerce market must understand the types of customers they are dealing with and develop their competitive strategies based on whether these companies wish to acquire new customers or retain existing ones. After capturing a new customer, companies should pay more attention to self-efficacy and utility aspects, as these factors further influence buyers' willingness to buy. [6]

In "Seasonal Relevance in e-commerce Search", Haode et al. from Amazon Inc. investigated the changes in customers' search behavior on their e-commerce platform in the time dimension. They concluded that seasonality is a very important relevance dimension in e-

commerce search. E-commerce search engines should incorporate seasonality into product search for the best user experience. Amazon's internal data mentions that 39% of product searches are highly correlated with the time of year searched, and 42% of total purchases in a year are generated directly or indirectly through these searches. From a product perspective, sales of products across Amazon are highly seasonally correlated on average 35% of the year, and they drive 48% of Amazon's annual retail sales during that period. In a series of experiments conducted around search, effective optimization for just one factor, season, yielded a 0.62% increase in clicks, a 1.22% increase in cart additions, and a 2.20% increase in purchases [7].

1.3. Research Gap

Limited by the availability and coverage of data, most of the current academic articles have only mainly studied the behavioral patterns of general customers in e-commerce. Although some scholars have discussed the behavioral differences between B2B consumers and general B2C consumers, they have not analyzed them by industry. Some e-commerce platforms, such as Amazon, Wayfair, Overstock, and e-commerce advisory platforms, such as ChannelAdvisor, Feedvisor, etc., have a huge amount of user data but do not provide detailed user behavior studies based on each industry. Few scholars have detailed analyses of B2B consumers' behavior for a particular industry. Therefore, this paper will analyze the buying habits of B2B consumers in the North American lighting industry and provide strategic advice.

1.4. Research Framework

This paper will use the following logic to analyze and propose the buying habits and behaviors of B2B consumers in the North American lighting industry.

- a) Select a supplier of lamps and lanterns ranked within 100 total sales in the U.S. Amazon platform marketplace [8]. Based on the last 5 years of sales data belonging to B2B consumers, find and analyze the patterns.
- b) Analyze and deconstruct the reasons for the formation of the pattern, and derive possible causes and elements that potentially influence the change in the pattern.
- c) Provide suggestions on utilizing the patterns and studies to improve the lighting industry suppliers' understanding of their B2B consumers and help them optimize their sales strategies to increase their sales.

2. METHODS

2.1. Case Study

This paper will utilize a case study to explore several possible factors that influence the buying habits of B2B consumers in the lighting industry in the North American e-commerce market. It will analyze the reasons for the formation of these factors and suggest feasible solutions to optimize the factors to allow suppliers in the industry to obtain possible benefit enhancement.

2.2. Comparative Analysis

This paper will also analyze behavioral trends from the nature of B2B consumers by comparing the behavioral differences between B2B consumers in the lighting industry and general B2C consumers in the North American e-commerce market. For the reference of suppliers in the industry to help them formulate future company plans and decisions to capture sales opportunities.

3. RESULTS

3.1. US Ecommerce Lighting Industry Concept

The lighting category is a second-level category in the North American e-commerce market, subordinated to the home improvement category.

3.1.1. Industry Overview

Based on end-user segmentation, residential lighting dominates the market. While commercial lighting holds the second largest market share and industrial lighting holds the third-largest market share. The growth of the service sector, the increase in the number of commercial buildings, and the boom in public infrastructure construction positively influence the growth of the commercial lighting market share [9].

3.1.2. Customer Segments

There are currently two main user groups in the lighting category in the North American e-commerce market: B2C consumers and B2B consumers. B2C consumers are represented by heads of households, such as housewives. B2B consumers are represented by local construction companies, property management companies, designer studios, and independent contractors. Independent contractors have the largest number and the most diverse product needs. Consumers such as construction companies, property companies, and design studios have the characteristics of high purchase volume and high professional demand.

3.2. Current Problems

Because of the good development of the e-commerce market in recent years, many regional and overseas suppliers have direct access to the local B2B consumers. Unlike the previous era, they no longer need the middleman or local distributor channels to approach these customers. Their profits are guaranteed, and they can supply more affordable products directly to B2B consumers. However, the biggest problem they face is that they do not know the end market.

Intermediaries like local sales or distributors based in destination markets have accumulated vast experience and huge advantages in local marketing, customer relations, and advertising. Although e-commerce helps manufacturers and suppliers to skip this middleman level, it also puts the huge problem of "how to get customers" on them. These suppliers may come from regions with completely different market characteristics or abroad. Differences in language, culture and habits create a huge barrier of market perception between them and the local B2B consumers. Regional and overseas suppliers don't know the precise demands of local B2B consumers. Suppliers who lack the networking and end-market experience cannot easily gain the trust of B2B consumers groups. Therefore, understanding the needs and habits of B2B consumers and developing a marketing plan that B2B consumers can trust is a priority for suppliers in the current U.S. e-commerce marketplace.

3.3. B2B consumers Behavior Study

Overall, a B2B consumer is usually backed by an economic entity. It may be a construction company or an independent contractor specializing in remodeling. They generally have clear objectives, precise needs, and strict budget control when making purchases. B2B consumers have more detailed product information needs and will have many significant and recognizable behaviors. The top 4 of their identifying behaviors are seasonal-based demand fluctuations, sensitivity to lead times, stickiness to target price ranges, and conservatism to new technology.

3.3.1. Seasonality

Seasonal fluctuations in demand are the most significant characteristic and recognizable behavior of B2B consumers. The trigger for this seasonal demand fluctuation is the change in demand of B2C consumers or the mass public demand, in other words. For the common household in U.S., spring and summer are the best times to remodel the backyard. It is best to complete the patio refresh before summer to host parties on a summer night. Fall is a popular season for indoor lighting for the upcoming holiday season, including holidays such as Thanksgiving, Christmas, and New Year's. In the winter, holiday lighting dominates the market. Every household

purchases Christmas lights and curtain lights. As a result, B2B consumers who do business with local B2C consumers typically pick up patio lighting in the spring, interior remodeling fixtures in the summer and fall, and holiday fixtures before winter. B2B consumers who primarily deal with commercial construction projects have different preferences. Spring and summer are usually when they start new commercial projects and source lighting fixtures. All projects are typically completed by the end of fall, just before the shopping season.

3.3.2. *Timely Manner*

The sensitivity to order lead time and delivery time is one of the most important characteristics of B2B consumers. In the actual procurement, this characteristic causes suppliers with shorter delivery times suppliers can get more orders. Suppliers with longer lead times lose opportunities for larger orders. Suppliers who report inaccurate inventory and delay shipments are subject to cancellation and lose the trust of B2B consumers.

3.3.3. *Match the Price, Quality, and Service*

The lighting market tends to be perfectly competitive. Each price range corresponds to a related product quality and service level in this market. Reflecting on the actual products, the price level matches the material, reliability, appearance, and warranty. Each B2B consumer positions their target product's quality according to the type and affordability of the customers they serve. B2B consumers can use their expertise and experience to determine their target product based on the copywriting and detailed specifications of the product. Any products sold at an inflated price will suffer from extremely high return rates and massive customer dissatisfaction.

3.3.4 *Passive Attitude to New Technology and Products*

The vast majority of B2B consumers are conservative and are reluctant to try any new products or technologies. They do not consider using new products to optimize their solutions as long as they can use the same solution to cover all of their customers' needs at an acceptable cost. They will only consider replacing products in their current solution when huge fluctuations affect their profits in the supply of the products they rely on.

3.4. *Case Study: B2B consumers' Behavior on the Amazon Platform*

As the largest online retail channel in the U.S. [10], Amazon accounts for a significant portion of North American lighting market sales. Most B2B consumers also choose Amazon as their procurement channel, so

their consumer behavior can be commonly observed on the Amazon platform.

3.4.1. *Seasonal Sales Event Behaviors*

In Amazon, the seasonal demand fluctuation characteristic of B2B consumers is mainly reflected by the high engagement with seasonal sales events. Amazon will actively hold two large sales events, Prime Day and Cyber Monday, each year. Prime Day is Amazon's mid-year sales event, generally held around July 20 each year and lasting 2 days. Cyber Monday, on the other hand, is a fixed annual sales period in the e-commerce industry, generally held on the first Monday after Thanksgiving each year and lasts for 2 days. In 2021, data show that B2B consumers' sales during the sales event periods are 1.7 times more than the regular period. During the event days, the Conversion Rate (CR%) of B2B consumers increased by 80.7% from the Year-to-date average CR%. This shows that seasonal sales events directly affect B2B consumers' willingness to buy.

Table 1. B2B consumers' CR(%) 2020 to 2021

B2B CR(%)	Event Period	Daily Average
2020	1.86x	1x
2021	2.15x	1.19x

3.4.2. *Amazon Prime Delivery Services*

Amazon is known for its powerful fulfillment network. Amazon promises free 2-day delivery of most products fulfilled by Amazon (and for some areas, even 1-day, and same-day delivery) to customers who subscribe to Prime membership [11]. B2B consumers, especially independent contractors, usually contract small projects. They need to provide product samples to their customers for approval, so the speed of delivery is one of their main considerations. Amazon's agile delivery speed is the main reason that attracts them to source through Amazon.

3.4.3. *A Failure Up-sale Case in Amazon.com: Dusk-to-Dawn A19 Light Bulb*

B2B consumers will have a clear empirical understanding of the relationship between product quality and price for their needs on the Amazon platform. During the 2020 to 2021 pandemic, a supply chain crisis struck the market. Shortages of bulbs and fixtures led to price increases for some products. In the Q4 of 2021, there was a widespread shortage of Dusk-to-Dawn A19 bulbs with a photocell sensor in Amazon. This A19 bulb is a cheap light bulb widely used in U.S. households. But because of the pandemic, a supplier raised the product's price, which was originally priced at \$15 to \$20, to a \$25 to \$30 price range for sales. However, B2B consumers in this price range found that the product's performance,

quality, parameters, and warranty were unable to meet their needs, which led to a wide-scale of return of the product, resulting in the product selling privileges being removed from Amazon.

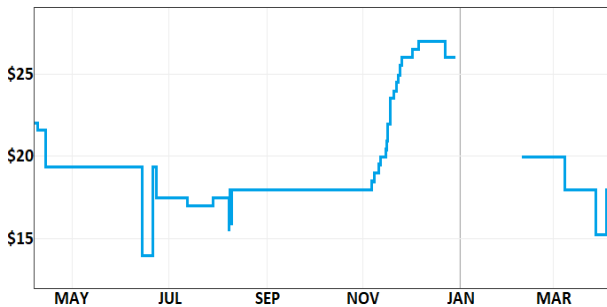


Figure 1. The Dusk-to-Dawn A19 bulbs's selling privilege was removed by Amazon after received massive returns and negative customer reviews, triggered by up-selling the product from \$18 to \$27

4. DISCUSSION

4.1. Summary of B2B consumers' Behavior in the Lighting Industry

In general, B2B consumers in the lighting category have certain regularities in their consumption behavior: their demand fluctuates with the seasons; they are very sensitive to order delivery time; they require matching the price and quality of products; they are relatively short-sighted, more interested in short-term profits, and lack curiosity about new technologies. And the reason for this is that they have clear goals, precise needs, and strict budget control compared to the average B2C consumers.

4.2. A Comparison of B2B consumers and B2B consumers in the US Ecommerce Lighting Industry

The person who performs the purchasing is different. Compared to B2C consumers, B2B consumers are typically buyers and owners of a company who decide on their procurement needs and then place orders. B2B consumers research and consider the value of money, reliability, compatibility, and delivery time of products during the selection process. In contrast, B2C consumers tend to buy products with better safety and comfort, willing to try new things. Therefore, B2C consumers B2B consumers need to know the detailed specification and performance data of the products to be perfectly adapted to the projects they are working on.

B2B consumers value reliability as a character more than B2C consumers. For example, as an average level remodeling independent contractor who has contracted hundreds of projects over a year. If the defective rate of luminaires in previous projects is too high, after-sales

warranty service and repairing will take up a lot of their time and energy and drop their reputation.

The goal of B2B consumers is to earn money. The size and number of projects contracted each year will directly influence their gross income. Therefore, company owners will seek to compress project times as much as possible in order to increase labor intensity, to complete more projects in the same period of times, and to generate more revenues. Therefore, the company owners are looking for fast delivery time and pre-sales consulting.

B2B consumers' needs are based on project solutions designed in advance. Whether construction companies, property companies, designer studios, or independent contractors, their needs are based on their contracted projects. So seasonal market demand will guide them to purchase products they need to complete their seasonal projects.

In addition, they also value the match of the price and quality of the product. Firstly, B2B consumers can be limited by their budgets. They do not have the option to give up their purchase, unlike B2C consumers. Secondly, they understand the customer group they serve and will buy from products that meet their positioning. For example, the category of landscape lighting is roughly divided into three levels from product materials: plastic, aluminum, and copper corresponding to \$5 bucks, \$50 bucks, and \$500 bucks in product prices and expected life spans of 1 to 2 years, 3 to 5 years, and more than 10 years.

4.3. Suggestions

Helping the industry understand the needs and habits of B2B consumers and developing a marketing plan that will attract a B2B consumers base is a top priority for suppliers in the current e-commerce marketplace. Based on the behavior of B2B consumers, suppliers need to pay attention to the following points.

- 1) Provide professional, detailed, and reliable product specifications and case studies;
- 2) Understanding market needs and providing highly accessible pre-sales consulting services;
- 3) Focus on fulfillment speed and compress lead times;
- 4) Define their product pricing level and provide quality and after-sales service.

5. CONCLUSION

E-commerce has impacted the retail market in the last decade, including the lighting industry. Numerous local suppliers have reached customers nationwide and even worldwide through online sales channels and a segment of B2B consumers. These B2B consumers have a high

average cost per order and low cost of sales for suppliers. These B2B consumers have the advantage of predictability and repeat buying habits as well. Through e-commerce marketplaces, many suppliers gain a price advantage by skipping the middleman, but they are unaware of the spending habits of end-market B2B consumers.

Based on market experience and data, B2B consumers generally have clear goals, precise needs, and strict budget control when making purchases. B2B consumers, therefore, have some common behaviors as their identifiers. They have four significant behaviors: seasonal-based demand fluctuations, sensitivity to order delivery times, stickiness to target price ranges, and conservative attitudes toward new technology.

Currently, the lighting industry lacks research on B2B consumers' habits and, as a result, lacks ways to engage B2B consumers effectively. Based on the behavior of B2B consumers, the industry should provide B2B consumers with customized and useful product information, highly accessible pre-sales consulting services, fast delivery, and product quality and after-sales services that match the products' price level.

In summary, this paper's behavioral analysis and marketing recommendations for the B2B consumers segment of the e-commerce lighting industry are based on recent developments in the e-commerce marketplace, data on industry sales, and developments in industry technology. It will provide generalized customer behavior analysis and forward-looking marketing points for suppliers who have not been exposed to but are ready to reach, the B2B consumers segment in the North American lighting industry.

However, as a theoretical study, this paper is not optimized for the current social environment and international situation. Considering the COVID-19 pandemic, supply chain impacts, and drastic changes in the international political situation, the actual market situation and B2B consumers' behavior may be affected. The current COVID-19 pandemic trend is moving positively, and the international situation will gradually moderate as the crisis passes. Therefore, it is hoped that in the near future, a more precise B2B consumer behavior model can be obtained through a large sampling survey and interviews with industry personnel in a relatively stable market environment.

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