

# ***The Impact of Bundling Strategy on Consumer Psychology of E-commerce in the Era of Big Data***

**Ran Chen<sup>1,a,\*</sup>**

*<sup>1</sup>International Business Management, Business School, Keele University  
Newcastle-under-Lyme, UK, ST5 5BG*

*a. isabelle.ran1109@gmail.com*

*\*corresponding author*

**Abstract:** With the informatization of versatile platforms, e-commerce has become the most popular promotional channel. As the key element of the marketing mix, price strategy plays an almost decisive role in a consumer's willingness to pay and consumer satisfaction. Thus, this study will explore the impact of bundling strategy on consumer psychology in big data e-commerce. The result shows that the bundling strategy can take advantage of big data to maximize product value perception and consumer satisfaction. Through the previous literature, the article finds many complex psychological aspects of consumers in bundle pricing under big data e-commerce. However, there are few studies on the specific elements and degree of impact on consumer psychology. Therefore, future studies can focus on using qualitative analysis to explore the influence of bundling strategy on consumer psychology in big data E-commerce and focus on one of the e-commerce platforms.

**Keywords:** bundling strategy, consumer psychology, consumer behavior, e-commerce, big data

## **1. Introduction**

With the rapid development of the Internet, e-commerce has become the most popular sales channel, with far more advantages than traditional commerce [1]. Meanwhile, big data collects the habits and preferences of customers in various applications so that enterprises can better design their marketing mix strategy for products to boost customer value [2]. Therefore, the application of big data has pushed e-commerce to unprecedented heights. So that in nowadays, sellers have to find various promotion strategies to improve their competitiveness to attract consumers and increase sales in such a competitive market [3]. The pricing strategy decides the sale volume and shows the enterprise's ability to create profits, increase customer demand, and gain more competitiveness [4]. Furthermore, as one of the most influential and profitable strategies, bundling is defined as the package selling of several goods [5]. The strong relationship between bundling strategy, big data and consumer psychology has been reported in the literature. It is valuable to explore the influence of bundling strategy on consumer psychology in the big data era. Therefore, this paper reviewed pieces of literature. In conclusion, the importance of this study is that it explores how various consumers' psychology is influenced by bundling strategies in Big Data E-commerce. Meanwhile, the findings of this article provide a particular value of theoretical reference for enterprise pricing strategy.

## 2. Relevant Background

The customer always seeks and chooses the best product value for the best mix of price and quality [6]. So that in the process of searching for products, consumers' mental activities are always influenced by the item information factors, which leads to differences in consumer psychology (as shown in Figure 1). Therefore, this study will explore the impact of bundling strategy on consumer psychology in the background of big data e-commerce from three perspectives: consumer demand, value perception, and psychological accounting and cost allocation.

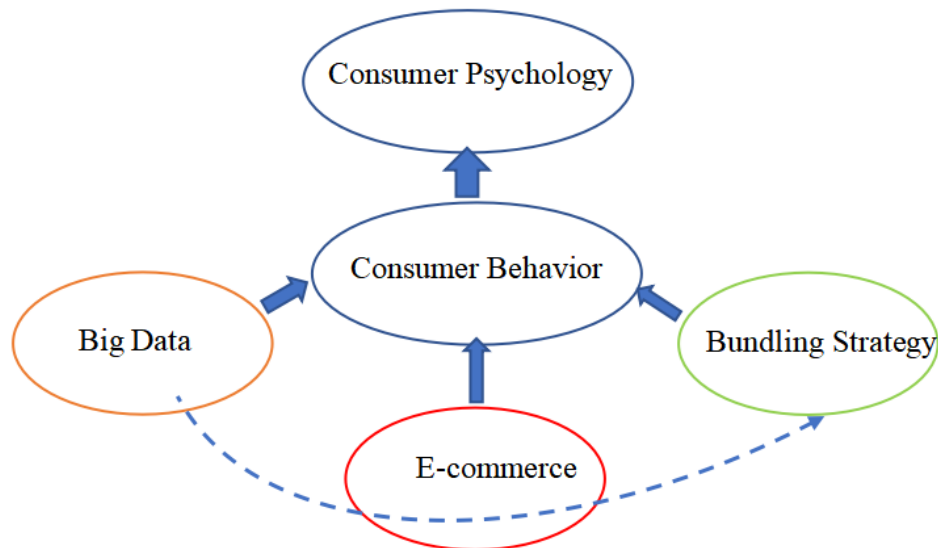


Figure 1: The relationship between consumer psychology and bundling strategy in big data e-commerce.

## 3. The Effects of Big Data on E-commerce and Consumer Behaviour

With the significant advantages of volume, velocity, variety, veracity, and value, big data technology in e-commerce is not just technology but a vital tool for understanding consumer behaviour and needs [2, 7]. Consumer behaviour refers to a series of actions when choosing products, like searching, evaluating, purchasing, etc., which shows how consumers spend time and money on products [8]. Therefore, commerce enters the new development stage through the combining of big data e-commerce and consumer behavior. Erevelles et al. build a resources-based theory to explore the influence of big data on various marketing activities. They found that big data expands unknown market information and data for marketers. Most importantly, it lays the information foundation for marketing analysis. This enables companies to understand consumer behaviour better and improve their competitiveness and market adaptability, as well as boost their ability to innovate [7]. Similarly, Chen and Du adopted the Grey Correlation Theory to analyse the features of big data during the period of practical application [1]. They highlight the precision and interactive marketing brought by big data, which means the products recommended will interchange with customers' interests. Then, according to the information and data, enterprises design products in response to the demands of customers [1]. In contrast to theory research, Liua et al. focused on considering the impact of big data on small and medium-sized enterprises (SMEs) in the UK manufacturing sector. Online data provides a wide range of consumer preferences, pricing bands, and product feedback reviews for product design [9]. After big data catches the needs and performance of customers exactly, the company can better make decisions on their marketing strategy and create maximum value for consumers to effectively boost the demand for products and increase profits. Therefore, customers would be more

willing to accept and pay for products. Schiffman and Wisenblit stated that technology could benefit consumers and markets because sellers have access to know in-depth about potential customers at a lower cost and take measures for the marketing mix strategy rather than be outdated, especially the pricing strategy and promotion [9]. While big data can provide an excellent reference value for consumer preferences, which means that it contributes significantly to maximize the value of the bundling strategy. De Bruin et al. apply qualitative and quantitative research methods to explore the sales strategies of online multilateral platform retail marketplaces such as Alibaba, Amazon, and Rakuten, especially concerning the analysis of bundling strategies. The article focuses on the reasons for the bundling strategy as an ecosystem value proposition for different brands and how it creates value for consumers [10], which makes enormous contributions to the blank research of bundling strategy application for digital dealers' platforms. While the previous study focused on the effect of big data on promotion strategy and consumer behaviour but ignored to do depth analysis of psychology.

Further, based on the vast amount of information and data on consumer behaviour, big data can transfer it to specific and personalized information about the perception and psychology of customers. Schiffman and Wisenblit and Chen and Du described the close relationship between big data and consumer behaviour [1, 9]. Matz and Netzer highlight that the informational benefits of big data and discuss how information to be used to understand consumer psychology [2]. According to qualitative and secondary data analysis, Matz and Netzer found that consumers tend to be more willing to accept and behave more positively toward products, prices, and marketing advertisements that match their interests, likes, and psychological characteristics [2]. In other words, companies can predict the psychological aspects of consumers and even predict the psychological state of consumers through big data. Although big data has tremendous power over consumer behaviour, it is still a few difficult things for enterprises to carry out. The reason is that there is an unpredictable partial gap in psychological states for customer emotions are transient, variable, and challenging to identify in real-time. Thus, researchers cannot fully explain the total range of consumer performance changes. While by combining the results of all information and data for individual analyses, researchers have obtained a relatively complete understanding of personal consumer preferences in the common situation [2]. However, a few recent arguments against big data benefits to e-commerce, which have been summarized by Liua et al. and Matz and Netzer. The study by Liua et al. used qualitative analysis and then found that some SMEs ineffectively use big data and identified the difficulties and challenges of using big data for SMEs, for example, the real-level cost issues and human resource issues for handling, installation, analysis, and maintenance [8]. Furthermore, big data has emphasized the disadvantages of operational cost-friendly [1, 2]. For instance, Matz and Netzer point out that collecting information from big data can be ethically problematic and thus questionable to the detriment of consumers' privacy and interests [2]. Overall, according to the previous studies, big data allows companies to maximize the value of information by understanding individualized consumers' consumer behaviour and psychology.

#### **4. The Impact of the Perceived Value of Bundled Pricing on Consumer Psychology**

As one of the marketing mix elements, pricing is the primary impression and significant factor that decides whether a consumer will pay for a product or not. While the consumer perceived value of price could be disturbed by marketing strategy. With the development of technology for describing and observing consumers' digital footprints, pricing has become increasingly customized and responsive [11]. Tuokko tested the relationship between psychological decision theory and consumer response to price changes using various theories. The results of Tuokko's study suggest that although the price is a significant determinant of purchase, consumer perceptions of price can still be influenced by market strategies, which may cause price cannot affect purchase decisions. In other words, the

consumer's choice is based on the perceived value of the entire marketing mix, not exclusively on the price factor. Price is only the first impression of consumption [11]. Thus, price is a crucial factor directly contributing to the value of products because the value exists between the difference in the product price and customer willingness to pay for products, which provides a space for the market portfolio to grow. It means if there is little price difference among the same product in various shops, the company can easily bring value to consumers and gain market share. Meanwhile, consumers will be more willing to accept the products. Moreover, Ahmetoglu et al. empirically investigated six pricing strategies in practice including and showed that they all have a significant impact on consumer behaviour and psychology, thus influencing consumer choice [12]. Through mathematical models and case analysis, Adams and Yellen propose three bundling models, commodity bundling, pure components, and mixed bundling, demonstrating their various price strategy and benefits. In addition, they point out the weaknesses of these three bundling types. Finally, Adams and Yellen show that commodity bundling is more profitable than simple monopoly [5]. Furthermore, Lee and Yi fill the study gap on the relationship between promotional framing and consumer repurchase. Their study shows that in bundle pricing, free bundles(buy A, send B) have lower returns than combo bundles due to the devaluation effect of free products. Meanwhile, they hypothesize that free bundles need to be supported by brand recognition. However, the bundle framework(buy A and B) is more conducive to reducing the freebie devaluation effect, which triggers higher consumer willingness to pay and repurchase intentions for complementary products after the promotional offer expires [3]. In conclusion, these previous studies prove that the pricing strategy would have a significant influence on consumers' behaviour. While these previous studies interpret pricing issues with a focus on the areas of management and sales, they do not deal with the actual impact of pricing strategies on the psychological level of consumers.

Consumer psychology is often more complex when they buy bundled products than a single product. Due to the influence of strategy, consumers' reaction to price is a nonlinear relationship [13, 15]. Based on previous studies, they found that consumer repurchase is positively correlated with satisfaction and fewer complaints. Chen uses empirical analysis to analyse the problems arising from bundled pricing of same-quality products, complementary products, and non-related products. Especially, Chen takes into account the theory of consumer regret proposed by Ziros and Mittal (2000) suggest that consumer regret decreases satisfaction and is negatively correlated with repurchase. She found that bundling products may cause consumers to regret when non-achieving their intended use value or bundling products could limit consumers' choices. As a result, consumers will choose the single products with higher price rather than bundling products to meet their needs [13]. By contrast, consumers are influenced by "comparison psychology" to exaggerate the difference between the two and thus find that bundling is profitable [14]. In addition, it is possible that sellers may take advantage of the "comparison mentality" by raising the price of an item before discounting it [13]. It may create a lucrative misconception and a psychological misunderstanding for consumers. Similarly, Nicolau and Sellers tested the loss of individual products and the single product included in a bundling product. They propose a one-button effect, using empirical analysis and logit models, and show that purchasing personal products is more loss averse than bundled products [15]. It can be seen that bundle pricing determines consumers' willingness to accept and even purchase. Bundling products can affect consumer satisfaction and repurchase. In contrast, if a product meets the consumer's expectations but is not bundled with other products, the consumer may develop a regret mentality. In conclusion, according to the available literature, consumers are more likely to purchase bundling products than single products. The premise of the customer's choice is that the bundling product meets their preferences and expectations. Therefore, both pricing and products in the bundling strategy will directly affect consumer psychology and consumer satisfaction. However, very little literature now indicates the extent to which the bundling strategy affects consumer psychology

under the influence of big data e-commerce. Through previous research, it can be found that big data provides essential reference information and data for pricing and bundling products for companies' bundling strategies by understanding consumers' preferences and needs. Thus, e-commerce websites can push the products or services consumers demand and bundle them effectively in real-time to maximize the value perception.

## 5. The Impact of Psychological Accounting and Cost Allocation on Consumer Psychology

There are more than two products in the bundling package, which will cause cost allocation and psychological accounting for bundling products share with the same price. Therefore, consumer willingness to pay may result in cost allocation. Liu and Chou explored the inertia of inaction of bundling strategies on individual products within the bundle. As a result, they found that consumers allocate higher yields to the main product and lower costs to the complimentary product in the bundles that include free products. Therefore, consumers will be less receptive to the main product after missing bundle promotion. In other words, after missing a relatively attractive or profitable opportunity, consumers will be somewhat less attracted to the main product alone and exhibit higher inertia of inaction. The opposite psychology is demonstrated for incidental products [16]. It can be seen that the information on bundling products not only reflects the demand of products for the customer but also is regarded as the division of two products in the total price of the bundling package. In addition, according to the study by Lee and Yi, the brand of free products in bundling packages would increase consumer willingness to pay [3]. Generally, bundling products with brand benefits bring more perceived value to consumers. The reason is that consumers may allocate more cost to the incidental product, thus reducing the cost of the main product. In addition, the bungling style of buying A and B would be mentioned in price comparison, especially in the age of e-commerce for various sellers clearly display the price of a single product in a bundle. Consumers are more likely to estimate and restructure the price of a product through a "comparison mentality". Overall, bundling packages' psychological accounting and cost allocation also influence consumer psychology.

## 6. Conclusion

In conclusion, with the involvement of big data e-commerce, the bundling strategy positively affects consumer psychology. Big data provides sellers with information and data on consumer interests and needs, which can be converted into personalized marketing of customer perceptions and psychological states. When looking for product information, the price can be an essential reference for consumers' willingness to pay. While the perceived value of the price is often disturbed by the marketing mix strategy. As a result, consumer decisions are influenced by a combination of price and promotion strategy. Bundled pricing, as one of the pricing strategies, has a complex and diverse impact on consumer psychology. With the role of big data e-commerce, consumers can get more value perception and consumer satisfaction. While there are minimal current studies on the qualitative data analysis of consumer psychology affected by bundling strategy in big data e-commerce. However, this study is only at the theoretical level. Therefore, future analysis can be conducted on the data or empirical research to analyse precisely what impact the bundling strategy will have on consumer psychology in big data e-commerce and focus the topic on one of the e-commerce platforms.

## References

- [1] Chen, M. X., & Du, Q. Y. *E-commerce marketing strategy based on big data statistical analysis*. In *2021 13th International Conference on Measuring Technology and Mechatronics Automation(ICMTMA)* (pp. 686-689). IEEE. (2021).
- [2] Matz, S. C., & Netzer, O. *Using Big Data as a window into consumers' psychology*. *Current opinion in behavioral sciences*, 18, 7-12. (2017).

- [3] Lee, S., & Yi, Y. "Retail is detail! Give consumers a gift rather than a bundle": Promotion framing and consumer product returns. *Psychology & Marketing*, 36(1), 15-27. (2019).
- [4] Ke, Y. Applications of Managerial Economics in Business Pricing Strategies. In *E3S Web of Conferences* (Vol. 235, p. 01061). EDP Sciences. (2021).
- [5] Adams, W. J., & Yellen, J. L. Commodity bundling and the burden of monopoly. *The quarterly journal of economics*, 475-498. (1976).
- [6] Tuokko, P. The influence of behavioral pricing strategies in consumer decision-making. (2019).
- [7] Erevelles, S., Fukawa, N., & Swayne, L. Big Data consumer analytics and the transformation of marketing. *Journal of business research*, 69(2), 897-904. (2016).
- [8] Schiffman, L. G., & Wisenblit, J. *Consumer behaviour* (Twelfth, global edition.). Harlow, England: Pearson. (2019).
- [9] Liua, Y., Soroka, A., Han, L., Jian, J., & Tang, M. Cloud-based big data analytics for customer insight-driven design innovation in SMEs. *International Journal of Information Management*, 51, 102034. (2020).
- [10] De Bruin, C., Sadowski, B., Tur, E. M., Raiteri, E., Nooij, R., & Fortuijn, J. Bundling as an ecosystem value proposition for an incumbent retail group. (2020).
- [11] Tuokko, P. The influence of behavioral pricing strategies in consumer decision-making. (2019).
- [12] Ahmetoglu, G., Furnham, A., & Fagan, P. Pricing practices: A critical review of their effects on consumer perceptions and behaviour. *Journal of Retailing and Consumer Services*, 21(5), 696-707. (2014).
- [13] Chen, H. L. Research on bundle pricing strategies based on consumer regret psychology. *Shanghai Business. Shanghai Business*. 4: 34-36. (2022).
- [14] Chen X. C. Bundled sales analysis based on comparative psychology. *Modern business industry*, 37 (15), 60-61. (2016).
- [15] Nicolau, J. L., & Sellers, R. The Bundling Strategy: The One-Click Effect on Loss Aversion. *Journal of Hospitality & Tourism Research*, 44(4), 704-712. (2020).
- [16] Liu, H. H., & Chou, H. Y. The effects of promotional package frames and price strategies on inaction inertia. *Psychology & Marketing*, 36(3), 214-228. (2019).