

## Exploration of the consideration factors of pure e-commerce business for transforming into new retail model

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### ABSTRACT

Since the outbreak of COVID-19 in the early year 2020, many businesses and industries have encountered serious impact on their operation and maintenance, but the significant growth rate of e-Commerce industries has caught all people's eyes. Many domestic and foreign leading businesses are forced to speed up their configuration for moving into e-Commerce and m-Commerce. For e-Commerce businesses, they do not have much physical communication and interaction with consumers, it may eliminate the expensive management costs, but they cannot provide customers with good opportunities for experiencing. So, how to pure e-Commerce transform into the New Retail Omnichannel operating model is an important research issue. In view of all, this study intends to apply Analytic Hierarchy Process (AHP) in combination with the Fuzzy Theory to analyze a decision-making issue, namely, what factors are deemed important or concerns to "the pure e-Commerce businesses" in their future transformation into New Retail Omnichannel operating model. In the results of this study, "increase revenue", "develop customer's potential market", "increase stock turnover", "reduce reverse logistics costs", and "increased management costs" are the five consideration factors most important to transformation into new retail model. The results from this study provide the pure e-Commerce businesses with considerably useful reference in the issue of transformation into New Retail operating model in their future.

*Keywords:* e-Commerce, New Retail, Omnichannel, Analytic Hierarchy Process, Fuzzy Theory.

### INTRODUCTION

Since the worldwide outbreak of COVID-19 in the early year 2020, a large number of different businesses and industries have encountered serious impact on their operation and maintenance (Wang et al., 2020). However, there are also some types of industries that make responses to the changed consumption behavior of consumers to grow successfully in the tough times. Among others, the significant growth rate of e-commerce and particularly cross border e-commerce industries has caught all people's eyes (Bhatti et al., 2020; Guthrie et al., 2021). In view that the fast change in industries resulted from the pandemic virus has become an inevitable trend, many domestic and foreign leading businesses in traditional retail business, such as Walmart, Costco and Carrefour, are forced to speed up their configuration for moving into e-Commerce and m-Commerce (mobile commerce) because more and more consumers change from offline shopping to online shopping.

On the other hand, most of the pure e-Commerce platforms do not have a physical location for business operation. Almost all business-related activities of e-Commerce from product exhibition and procedures of transaction and payment to pre-sales and after-sales services are done online and the e-Commerce operators completely need not be in real contact with customers. This largely eliminates the expensive store rent, utility costs, personnel costs and management costs (Gajewska et al., 2019). However, compare to physical retailers, the pure e-Commerce businesses are in a congenital inferior position in terms of their operation, that is, they do not have much physical communication and interaction with consumers, nor do they provide customers with good opportunities for experiencing products, consultations and after-sales service (Jusoh & Ling, 2012). Further, for pure e-commerce businesses, the delivery of products ordered by customers is completely relied on a logistics network established by cooperating with third party logistics companies. In the case there are orders come from suburban areas that are located faraway or not supported by currently applicable logistics systems, a budget for investing more costs must be planned to ensure cooperation with a third party logistics company that provides a more comprehensive logistics network. This will doubtlessly increase the operation expense and lead to failure in accurate control of logistics delivery information and the security of products in delivery (Fan et al., 2020). For customers who go shopping on e-Commerce platforms, instant delivery of ordered products and fast return and exchange of purchased products would have direct influence on their intention of repeat consumption (Couture et al., 2021; Meng, 2021).

Further, from the consumers' point of view, the current consumption environment and scenes provide them with two types of consumption models at the same time, i.e. they can go shopping in offline physical retail stores or on online e-Commerce platforms. As a result, consumers nowadays sprout a new thinking model of consumption before they purchase. That is, many consumers would get an idea of the general specifications and price ranges of the target products online before they inquire and buy the products directly in the physical stores. There are also other consumers who will first go to the offline physical stores for a direct contact of the real products, and select to compare prices on e-Commerce platforms and place their orders online.

The above-mentioned two consumption models respectively have their pros and cons; however, they bring different problems to the online pure e-Commerce businesses. While the online pure e-Commerce businesses need not pay high costs for store operation, maintenance and personnel management, they have no real contact with customers and could not provide products for customer experiencing or provide other better services to customers. Generally, customers do not have a great affection for e-Commerce brands and accordingly, have relatively low stickiness to them. Another problem with e-Commerce is the endless consumption disputes caused by online shopping. For instance, a consumer placed an order online and hopefully anticipates the receipt of adored product purchased online, but eventually finds the received product quality is not as good as expectation or the received product is different from what is expected. In this case, if the e-Commerce business did not establish good customer risk management and after-sales service system to handle the customer's complaint, it is natural the buyer would no longer trust the e-Commerce brand (El Haq et al., 2021).

In view of the above facts, the pure e-Commerce businesses need to find a way to get a balance between controlling cost and providing consumer experience, in order to provide consumers with the best possible services as well as product prices that mostly satisfy consumers' marginal benefit. By doing these, it would increase the existing and the potential customers' intention to purchase and largely influence the customers' satisfaction with the products and even the brands (Wang & Ng, 2020). Therefore, there are more and more domestic and foreign pure e-Commerce businesses pay great attention to the development trend of the new sales channel model of integrating online purchase with offline physical stores. For example, Alibaba, the largest e-Commerce business entity in China, had established a physical store, namely, Fresh Hema, in 2015 to sell fresh foods. This is the first time the concept "retail stores are also logistics sites, and on-shelf products in the store are also storages" is introduced into the market, which unites the online and offline stocks (Kim et al., 2019). Another example is Whole Foods Market, which is an American physical retail company acquired by the leading e-Commerce company Amazon in 2017. Whole Foods Market has its own powerful logistics system and emphasizes that all products, no matter they are ordered online or offline, will be delivered within two hours to thereby create a brand differentiation from other companies in the same sector<sup>1</sup>. Meanwhile, Shopee, a big-scaled Singaporean consumer-to-consumer (C2C) e-Commerce Company, who established a number of physical stores in Taiwan from August to November, 2021 to provide the so-called "Shopee store to store" service.<sup>2</sup> With the establishment of physical stores, products can be more smoothly delivered to largely reduce the logistics cost; and it is possible for customers who come to the physical stores for sending or picking up packages to repeat consuming in the stores. In this way, the physical stores can provide customers with faster and exact services<sup>3</sup>.

From the above brief overview of the active development and integration of physical stores with existing e-Commerce business by some prominent e-Commerce companies, either Online to Offline (O2O) or Offline to Online (O2O), it can be seen the "new retail" era of omnichannel sales model emphasizing Online merge Offline or Offline merge Online (OMO) has come. New retail is actually not a new operation tool or platform, but an innovative business thinking (Yang & Zhang, 2017). A biggest difference between New Retail and Pure e-Commerce is that New Retail emphasizes the business strategy of O2O, i.e. providing consumers with a consumption model across online and offline for consumers to experience services and products more smoothly. In New Retail, data of multiple online and offline sales channels are integrated or merged and a membership system can be established, so as to implement more precise consumer-directed marketing strategy to reduce the business budget for marketing. In conclusion, New Retail is a data-driven pan-retail style centered on consumer experience; it deems consumer's requirement, experience and perception as its core concept of business operation and emphasizes the OMO sales model to integrate retailer industry, e-Commerce industry, warehousing and logistics industries, and even manufacturing industry with one another. To realize this foreseeing and visioning target, online pure e-Commerce businesses must go to offline to develop their physical channels to fulfill the core spirit emphasized by New Retail, i.e. becoming omnichannel.

From the above described background and motivation discussion, it can be found the e-Commerce industry itself is a quickly developing and ever changing and growing market. Presently, there are numerous middle- and small-scaled enterprises that engage in pure e-Commerce businesses in Taiwan. However, these businesses do not have any physical sales channel, it is absolutely not easy for them to transform into the New Retail Omnichannel operating model. In addition to the already oversaturated retail market, they are also facing numerous strict challenges, such as how to definitely find their own market niche in the future New Retail market, how to use their pre-existing capitals properly to master the existing and the potential customers' requirements, how to provide even better product experience and sales services to the consumers, and how to build their own channel brands to expand their new retail omnichannel businesses in the future.

In view of the above discussion, this study intends to apply Analytic Hierarchy Process (AHP) in combination with the Fuzzy Theory to analyze a decision-making issue, namely, what factors are deemed important or concerns to "the pure e-Commerce businesses" in their future transformation into New Retail Omnichannel operating model. It is hopefully the analytic results could provide some substantive references and suggestions to the existing or future e-Commerce businesses.

<sup>1</sup> KKnews.cc, <https://kknews.cc/zh-tw/food/mr425a2.html>, 2022.

<sup>2</sup> Shopee, <https://shopee.tw/m/spxservicepoint#T1>, 2022.

<sup>3</sup> INSIDE, <https://www.inside.com.tw/article/24769-shopee-physical-store>, 2022.

## LITERATURE REVIEW

### *New retail*

In 2017, when the sales channels constantly increase, Jack Ma, who is the Chairman of Alibaba at that time, raised the concept of New Retail. According to Jack Ma, the pure e-Commerce has died, and both e-Commerce businesses and traditional retailers must turn to the OMO Omnichannel New retail. This concept brings all enterprises engaged in e-Commerce and physical retail to think about future transformation into the new business operating model that integrates all online and offline sales channels (Wang & Ng, 2020). More specifically, the New retail is an Omnichannel business operating model that converges online and offline, emphasizes consumer-focused, and is driven by technical means, such as big data and artificial intelligence (AI). When the products, logistics and customer services available on all online and offline channels, including cloud platforms, online shopping platforms and physical stores, are fully integrated with digital data, all participants on the value chain can share the data, and customers can have more complete product and service experience. In this way, it is able to rebuild the critical factors in retail activities, namely, people, things and places. More specifically, the New retail has three features, namely, omnichannel, online merge offline (OMO) and customer experience (Verhoef et al., 2015; Liu et al., 2020; Lemon & Verhoef, 2016).

In the past ten and more years, there was actually quite a lot of literature in the academic research field that is related to the discussion of e-Commerce and retail. Most articles in the literature focused on the discussion of consumer attitude and behavior. For example, in the research conducted by Nisar and Prabhakar (2017), they discussed the influence of online service quality of e-retail industry on customer satisfaction, loyalty and consumption intention; in the research conducted by Wagner et al., (2020), they discussed the influence of mobile channels on traditional e-retail industry and indicated that consumer shopping experience can be effectively enhanced by creating a shopping APP. However, since New retail is an issue emerged only in recent years, there are few studies that discuss the new retail channel and operating model and its value to consumers.

### *Fuzzy Analytic Hierarchy Process*

Analytic Hierarchy Process (AHP) was developed by Saaty in 1977, which is one type of MCDM particularly for solving decision-making issues with multiple evaluation criteria and alternative solutions and has a wide range of applications (Saaty, 1980). Up to date, AHP has been widely applied in solving various decision-making issues involving ranking, selecting, evaluating, and predicting (Saaty & Vargas, 1982). AHP is advantageous in that it helps users to decompose the complicated decision-making issue into several independent sub-issues and to organize or simplify these sub-issues into an evaluation hierarchical framework (Shee et al., 2003). The evaluation hierarchical framework includes different evaluation elements for solving the decision-making issue, including evaluation dimensions, evaluation criteria or factors, and alternative solutions (Meade & Presley, 2002). From the evaluation hierarchical framework, the decision maker can clearly find out the relationship among different hierarchical levels to thereby determine the most appropriate evaluation elements and even the optimal solution for the decision-making issue (Nikou & Mezei, 2013).

It is true the conventional AHP enables comparison of the degree of importance of the evaluation elements. However, in the process of evaluating the decision-making issue, human thinking is usually characterized by a degree of fuzziness and there is not always a distinct boundary between the decision maker's judgments with respect to the pros and cons of different alternatives, which might lead to bias in the evaluation results (Chan & Kumar, 2007). Therefore, Van Laarhoven and Pedrcyz (1983) proposed a method that combines the Fuzzy Theory with AHP and is referred to as Fuzzy Analytic Hierarchy Process (FAHP) for overcoming the above-mentioned problems. In FAHP, much more strict and complicated computing is applied, so that the experts' judgment and answer to the degree of importance of any two elements in the evaluation hierarchical framework compared in pairs can more actually reflect the situation in which humans think about something, while the disadvantages, such as being fuzzy or overly subjective, accompanying with humans' judgment about the pros and cons of different evaluation elements and alternatives can be compensated. In this way, it is possible to reduce the production of incorrect analytic results and to more effectively find out the optimal solution for decision maker (Yang & Lin, 2019).

Different from AHP, the FAHP converts data into triangular fuzzy numbers, and the calculation is more complicated. Besides, the results are more reliable and closer to the actual situation. The steps of FAHP calculation are described below:

1. Establish the hierarchy structure of evaluation: After deciding the decision-making problem to be conducted, selecting suitable consideration dimensions and factors for the target decision-making so as to establish the hierarchy structure of evaluation.
2. Conduct pairwise comparison: Once the hierarchy structure is established, adopting the nine scale of pairwise comparison between dimension layer and each factor layer to conduct pairwise comparison for the ranking of each consideration element. Further, converting the scores into triangular fuzzy semantic membership functions. The conversion of pairwise comparison scale is shown in Table 1.

Table 1: Pairwise Comparison Scale and Triangular Fuzzy Numbers Conversion

Scale	Definition	$F_{ij}=(L_{ij}, M_{ij}, R_{ij})$
1	Equal importance	$1' = (1, 1, 3)$
3	moderate importance	$3' = (1, 3, 5)$
5	strong importance	$5' = (3, 5, 7)$
7	demonstrated importance	$7' = (5, 7, 9)$
9	extreme importance	$9' = (7, 9, 9)$

3. Build matrix of pairwise comparison: On the upper triangular part of the pairwise comparison matrix, placing the comparison score for a group of dimensions and factors made up of  $A1, A2, A3, \dots, An$ . Further, the reciprocal number of the score for the relative position on the lower triangular part is considered, namely,  $a_{ij}=1/a_{ji}$ , where  $a_{ij}$  represents the relative priority of dimension/factor  $i$  to dimension/factor  $j$ .
4. Convert each matrix value into the triangular fuzzy numbers: Following Table1, converting each value in the pairwise comparison matrix into the triangular fuzzy numbers ( $F_{ij}$ ), where  $F_{ij} = (L_{ij}, M_{ij}, R_{ij})$  is the fuzzy number of dimension/factor  $i$  to dimension/factor  $j$ .
5. Calculate the fuzzy local weights of each dimension and factor: After obtaining the overall triangular fuzzy numbers of all dimensions and factors, the mean of these triangular fuzzy numbers is further calculated to obtain the mean  $L_i, M_i,$  and  $R_i$  of the fuzzy numbers. Finally, calculating the triangular fuzzy local weights  $L'_i, M'_i,$  and  $R'_i$  of each consideration element.
6. Obtain defuzzify value and normalization weight: After obtaining the triangular fuzzy local weights in the step 5, we defuzzify the triangular fuzzy local weights and convert them into a real number  $DW_i$ , then set the sum value  $DW_i$  of all dimensions and factors as 1.0. Next, conducting normalization to obtain the final fuzzy local weight (LW)  $DW'_i$  of each consideration element.
7. Determine the priority of each consideration factor: Subsequent to the steps above, the triangular fuzzy local weights of each dimension is then multiplied by the triangular fuzzy local weights of all factors under the same dimension, so that an triangular fuzzy global weights is obtained for each factor. Further, defuzzifying these triangular fuzzy global weights and conducting normalization to obtain the final fuzzy global weight (GW) of each factor. Finally, the priority of each consideration factor in the decision-making problem can be determined by reviewing the GW of the factor.

## RESEARCH METHOD

In this study, interviews with operators of multiple domestic middle- and small-scaled pure e-Commerce businesses were first conducted, and a variety of information obtained from the interviews was summarized and compiled to get a preliminary understanding of the difficulties currently encountered by the e-Commerce businesses in their operation. Further, an evaluation element hierarchical framework was established based on the concluded pain points of the e-Commerce businesses; and FAHP method was used to analyze what critical consideration factors are deemed important or concerns to the pure e-Commerce businesses when they face the issue of whether to transform into the “new retail” operating model in the future.

### *Selection of Consideration Elements*

From the results of interviews mentioned above, it was found the major considerations of e-Commerce businesses for transforming from the current operating model into a new operation pattern should include what bottlenecks in existing operation can be improved through the transformation, what benefits can be brought to the business by the transformation, and what risks are to be undertaken for the transformation. In view of this fact, the content of interviews with the pure e-Commerce businesses, the study on the evaluation of tangible benefits, intangible benefits and risks to business electronic operation conducted by Irani & Love (2000) and Shang & Seddon (2002), and the value-based adoption model proposed by Kim et al. (2007) based on the cost-benefit theory were taken in this stage as a reference to classify the benefits from transforming pure e-Commerce into new retail into 5 major dimensions, namely, “market benefit”, “economic benefit”, “brand benefit”, “marketing benefit” and “cost consideration”.

Through compilation and summarization of literature and based on the pain points of existing e-Commerce businesses in running e-Commerce, this study selected total 27 consideration factors under the 5 major dimensions. By setting the analysis objective of this study to the exploration of “consideration factors deemed important to the pure e-Commerce businesses in their future transformation into new retail operation pattern”, all of the consideration factors are defined below, as shown in Table 2.

Table 2: Definitions of Consideration Factors for Transforming into New Retail

Dimension	Consideration Factor	Definition
D1 Market Benefit	C1.1 Increase stock turnover	Sales channels can be increased to upgrade sales amount and enable higher stock turnover after transforming into new retail.
	C1.2 Decrease unnecessary stockpile	The demands of all possible customers and sales channels can be more precisely understood and controlled after transforming into new retail and accordingly, different purchase and stock strategies can be set to decrease unnecessary stockpile.
	C1.3 Precisely understand market price fluctuation	The fluctuation in product market prices can be more precisely understood and controlled after transforming into new retail to thereby reduce the occurrence rate of having a sales amount lower than the purchase cost.
	C1.4 Increase produce sales channels	Products can be sold without being limited to only online channels any longer after transforming into new retail.

	C1.5 Create opportunity for cross-industry cooperation	Physical stores can be expanded after transforming into new retail to enable cooperation with cross-industry traders, such as having stocks consigned in the stores of other traders for tie-in sales with other traders' products.
	C1.6 Develop customer's potential market	After transforming into new retail, more potential customers or customers who did not trust online shopping can come to offline physical stores for product experience or product consultation and even buying products.
D2 Brand Benefit	C2.1 Strengthen brand competitiveness	The own-brand competitiveness can be increased after transforming into new retail for customers to first consider it when they want to purchase a certain type of product.
	C2.2 Create brand topicality	The own-brand could become more topical after transforming into new retail and often be the first brand that the customers think of when they are talking about a certain product with friends.
	C2.3 Increase brand attraction	The own-brand would be more attractive to customers after transforming into new retail and get their immediate attention to the information about sales promotions and newly launched products.
	C2.4 Increase brand awareness	The own-brand can have increased awareness after transforming into new retail, and all customers would know the brand as soon as they hear of it.
	C2.5 Shape brand positioning	The positioning of own-brand in customers' mind can be strengthened after transforming into new retail, such as being a 3C specialty store or a clothing specialty store.
	C2.6 Increase brand exposure	The own-brand would have increased exposure after transforming into new retail, and offline stores can be living signboards to expose own-brand to more customers.
	C2.7 Increase the number of members	In addition to keeping the original online customer members, more offline new customer members can be increased after transforming into new retail.
D3 Economic Benefit	C3.1 Reduce reverse logistics costs	After transforming into new retail, customers can come to the offline stores to really contact with the products, which can largely reduce the situation of receiving non-expected or malfunctioned product. Customers may also come to the offline stores to settle any product exchange and product return, which would reduce the cost of reverse logistics.
	C3.2 Reduce intermediate costs	After transforming into new retail, the business owner no long needs to pay a high amount of intermediate costs to the B2B2C platforms for selling and advertising products on the platforms.
	C3.3 Shorten payment collection cycle	After transforming into new retail, customers have the option of directly coming to the offline stores to pay and pick up their products, which would shorten the time of payment collection.
	C3.4 Set product prices independently	After transforming into new retail, the business owner can independently set the sales prices of products sold online and offline according to the existing market condition; and can adjust the prices according to changes in the market from time to time to make a quick response to the market.
	C3.5 Increase revenue	After transforming into new retail, products can be sold via multiple online and offline sales channels to increase revenue.
D4 Marketing Benefit	C4.1 Increase product mix	After transforming into new retail, more types of product mix can be considered, such as buy product A and get product B free, so as to attract more consumers.
	C4.2 Provide consumers with value-added services	After transforming into new retail, more types of value-added services can be provided, such as come to check in and experience product to get one discount coupon, so as to enhance consumers' stickiness to the products.
	C4.3 Provide product differentiation	After transforming into new retail, it is able to highlight how the own-products are different from other e-Commerce products by, for example, providing customers with real product experience, using teaching, etc.
	C4.4 Enhance product advertising effect	After transforming into new retail, the advertising of specific products can be reinforced via the offline stores, such as sending DM of hot sale products or making advertising posters.
D5 Cost Consideration	C5.1 Increased labor costs	The transforming into new retail channel model necessitates hiring of more employees for managing all the online and offline channels, such as store staff and warehouse workers.
	C5.2 Increased advertising and marketing costs	The transforming into new retail channel model necessitates additional advertising and marketing costs for products sold on offline channel, such as holding sales promotions at physical stores.
	C5.3 Increased operational costs	The transforming into new retail channel model necessitates additional expenses for operating the physical stores, such as utility costs, store rent and

		equipment cost.
	C5.4 Increased management costs	The transforming into new retail channel model necessitates additional expenses for managing the offline physical channel, such as supervising all physical stores and the divisions thereof and integrating all online and offline resources.
	C5.5 Increased logistics costs	The transforming into new retail channel model necessitates additional payment to increased logistics services of, for example, transporting products from a warehouse to the physical stores or redeploying and transporting products between any two physical stores.

## ANALYSIS RESULT

### Descriptive statistical analysis

In this study, every expert participated in the questionnaire interviews is an operator of a domestic middle- or small-scaled pure e-Commerce business. All the interviewed experts have more than ten years of experience in running and managing e-Commerce; and they are currently operators or managers of a certain e-Commerce brand. Besides, a majority of these e-Commerce businesses do not provide consumers with physical services, such as product trial use and in-store sales. A total of 15 experts participated in the questionnaire interviews in this study. Table 3 shows the demographic statistics information of these experts.

Table 3: Demographic Information of Experts

Item	Sub-item	Count	Percent
Gender	Male	11	73.3%
	Female	4	26.7%
Age	36-40	5	33.3%
	41-45	6	40.0%
	46-50	3	20.0%
	Over 50	1	6.7%
Main items of business	Computers and Peripheral Equipment	6	40.0%
	Electronic Parts and Components	2	13.3%
	Communication Equipment	3	20.0%
	Wearing Apparel and Clothing Accessories	4	26.7%
Position	Chief Executive Officer	3	46.7%
	General Manager	5	20.0%
	Manager	7	33.3%

### FAHP Analysis

In this study, all of the experts participated in the interview were required to complete a questionnaire using 1-9 score of pairwise comparison scale proposed by Saaty (1990); and each expert was requested to make the pairwise comparison for both of the dimension level and the factor level. In addition, to ensure the questionnaire's validity, the consistency test was applied in this study to check whether the consistency index (*C.I.*) and the consistency ratio (*C.R.*) of each question are passed the test, so as to guarantee the consistency of answers from each expert to the questions (Saaty, 1990). If there were any answers that failed to pass the test of consistency, the expert was requested to refill the questionnaire again. The formula of *C.I.* is explained as follows:

$$C.I. = \lambda_{max} - n / n - 1 \quad (1)$$

where  $\lambda_{max}$  is the maximum eigenvalue of each pairwise comparison question, and  $n$  is the number of the hierarchical consideration factors.

Saaty (1990) suggests  $C.I. \leq 0.1$  is more ideal. However, when the decision problem becomes complicated, the number of hierarchy in the matrix would increase accordingly. As a result, it will be more challenging to verify the consistency of pairwise comparison result. Considering this issue, the "random index" (*R.I.*) is proposed by Saaty (1990) as shown in Table 4, to adjust the changes of different *C.I.* values in different hierarchies, which was known as, "consistency ratio" (*C.R.*).

Table 4: Random Index of Consistency

Number of level factors (n)	1	2	3	4	5	6	7
R.I. value	0.00	0.00	0.58	0.90	1.12	1.24	1.32

Saaty (1990) also suggested that  $C.R. \leq 0.1$  is better, it indicates that the consistency of pairwise comparison is dependable. The formula of *C.R.* is shown as follows:

$$C.R. = C.I. / R.I. \quad (2)$$

After all the questionnaires passed the test of consistency, this study further conducted the FAHP method to analyze the scores of each questionnaire. Through the FAHP analysis, a triangular fuzzy number was obtained for each of the consideration dimensions and the consideration factors. After the process of defuzzify and normalization, the fuzzy local weight (LW) of each consideration element was calculated. Further, the LW of each dimension was multiplied by the LW of each of the factors under the dimension to thereby obtain the fuzzy global weight (GW) of each consideration factor in the whole hierarchy structure of evaluation. Then, according to the GW, the priority of consideration factors was ranked. The results of the FAHP analysis are shown in Table 5.

Table 5: Weights and Priority of Dimensions and Factors

Elements	Lower score	Middle score	Upper score	De-fuzzy value	LW	Local rank	GW	Global rank
D1 Market Benefit	0.108	0.257	0.795	0.387	0.270	<b>1</b>		
D2 Brand Benefit	0.068	0.193	0.582	0.281	0.197	3		
D3 Economic Benefit	0.081	0.285	0.787	0.384	0.269	<b>2</b>		
D4 Marketing Benefit	0.036	0.098	0.346	0.160	0.112	5		
D5 Cost Consideration	0.048	0.168	0.438	0.218	0.152	4		
C1.1 Increase stock turnover	0.113	0.301	0.834	0.416	0.304	<b>2</b>	0.082	<b>3</b>
C1.2 Decrease unnecessary stockpile	0.038	0.087	0.305	0.143	0.105	4	0.028	15
C1.3 Precisely understand market price fluctuation	0.027	0.072	0.223	0.107	0.078	5	0.021	21
C1.4 Increase produce sales channels	0.044	0.127	0.388	0.186	0.136	3	0.037	9
C1.5 Create opportunity for cross-industry cooperation	0.022	0.059	0.186	0.089	0.065	6	0.018	23
C1.6 Develop customer's potential market	0.125	0.355	0.802	0.427	0.312	<b>1</b>	0.084	<b>2</b>
C2.1 Strengthen brand competitiveness	0.074	0.188	0.614	0.292	0.205	<b>1</b>	0.040	<b>7</b>
C2.2 Create brand topicality	0.033	0.083	0.310	0.142	0.100	6	0.020	22
C2.3 Increase brand attraction	0.046	0.130	0.400	0.192	0.135	5	0.026	18
C2.4 Increase brand awareness	0.048	0.156	0.383	0.196	0.137	4	0.027	17
C2.5 Shape brand positioning	0.018	0.052	0.161	0.077	0.054	7	0.011	26
C2.6 Increase brand exposure	0.063	0.197	0.575	0.278	0.195	<b>2</b>	0.038	<b>8</b>
C2.7 Increase the number of members	0.060	0.194	0.490	0.248	0.174	3	0.034	11
C3.1 Reduce reverse logistics costs	0.112	0.254	0.643	0.337	0.267	<b>2</b>	0.072	<b>4</b>
C3.2 Reduce intermediate costs	0.043	0.108	0.286	0.145	0.115	3	0.031	13
C3.3 Shorten payment collection cycle	0.023	0.043	0.116	0.061	0.048	5	0.013	25
C3.4 Set product prices independently	0.035	0.091	0.284	0.137	0.108	4	0.029	14
C3.5 Increase revenue	0.217	0.505	1.023	0.581	0.461	<b>1</b>	0.124	<b>1</b>
C4.1 Increase product mix	0.090	0.213	0.599	0.301	0.235	3	0.026	19
C4.2 Provide consumers with value-added services	0.049	0.109	0.299	0.152	0.119	4	0.013	24
C4.3 Provide product differentiation	0.172	0.426	0.937	0.512	0.399	<b>1</b>	0.045	<b>6</b>
C4.4 Enhance product advertising effect	0.104	0.252	0.597	0.318	0.248	<b>2</b>	0.028	16
C5.1 Increased labor costs	0.098	0.184	0.524	0.269	0.232	<b>2</b>	0.035	10
C5.2 Increased advertising and marketing costs	0.061	0.125	0.351	0.179	0.155	4	0.024	20
C5.3 Increased operational costs	0.096	0.183	0.454	0.244	0.211	3	0.032	12
C5.4 Increased management costs	0.231	0.462	0.508	0.400	0.346	<b>1</b>	0.053	<b>5</b>
C5.5 Increased logistics costs	0.027	0.047	0.119	0.064	0.056	5	0.008	27

## CONCLUSION

This study summarized the pain points encountered by the pure e-Commerce operators in running their e-Commerce businesses; and took the cost-benefit theory as a reference to build the evaluation hierarchical framework of this study. Further, the FAHP method was applied to conduct data analyses in order to understand the consideration factors of the current pure e-Commerce businesses for transforming into the new retail omnichannel OMO operating model.

As can be found from the analysis results of this study, "D1 Market Benefit (0.270)" and "D3 Economic Benefit (0.269)" are the two consideration dimensions most important to the e-Commerce businesses for transformation into new retail model. Besides, as can be seen from Table 5, the sum of the GW of the top seven key consideration factors (C3.5 Increase revenue, C1.6 Develop customer's potential market, C1.1 Increase stock turnover, C3.1 Reduce reverse logistics costs, C5.4 Increased management costs, C4.3 Provide product differentiation, and C2.1 Strengthen brand competitiveness) accounts for more than 50% of the total GW. It indicates that these factors have a great influence on the pure e-Commerce businesses in their future transformation into New Retail Omnichannel operating model.

It is found from the above analysis results that, in the event a pure e-Commerce business considered adopting the omnichannel sales model, what it cares is whether it can attract more potential consumers to know and get contact with its own brand and attract consumers to its physical stores to try and experience the products they are interested in and even buy the products, so as to increase its sales volume and accordingly, earn higher revenue. Meanwhile, the pure e-Commerce businesses also hope the transformation into the new retail operating model could encourage customers to return and exchange products at the physical stores to thereby largely reduce the reverse logistics expenses that were undertaken by the businesses in the case of e-Commerce. However, the pure e-Commerce businesses were also concerned that the adoption of OMO operating model might require a huge amount of management expenses, such as the expenses for supervising physical stores and integrating online and offline resources.

The results from this study provide the pure e-Commerce businesses with considerably useful reference in the issue of new retail. In future studies, more decision making analysis approaches, such as DEMATEL and ANP, can be used in combination to analyze the attitude of e-Commerce businesses of different business items, such as consumption electronic products, garments, computers and peripherals, towards the key consideration factors they deem important or are concerned in future transforming into new retail operating model, and to see how the difference is among the consideration factors of these e-Commerce businesses of different business items.

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