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International Online Shopping: Countries development level matter in marketing Chinese Brands?

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Abstract

Until now, the literature on Chinese International Online Shopping (CIOS) (B2C export from China) mainly concentrated on the potential income that it constitutes for Chinese international trade. However, regarding International Online Consumers' (IOCs) purchase behaviors, research does not provide insight into the impact of Countries' Level of Economic Development (CLED) on the IOCs' preferences and choices about Chinese brands. Based on 9971 purchases about Chinese mobile phone brands, countries' macroeconomic data, and a multinomial logistics model (MLM), we examined IOCs' preferences and choices about Chinese brands. The result shows that the CLED influences IOCs' preferences and choices. Consequently, accounting of CLED in consumers' preferences and choices introduces a new dimension in understanding IOCs' behaviors and attitudes towards Chinese mobile phone brands. This work contributes to Chinese brands' globalization research from the perspective of CLED. Such a model can be used to guide e-retailers and brand managers.

Keywords: International Online Shopping, Countries' Level of Economic Development, International Online Consumers, Chinese mobile brands

INTRODUCTION

Technological development has removed the traditional boundaries between countries (Strizhakova, Coulter, and Price, 2008) by stirring the International Online Shopping (IOS) growth. Henceforth, thanks to the IOS, world consumers operate on a broader market by leveraging international transactions (Cui et al., 2019). In this perspective, China has become, since 2012, one of the leading markets for the IOS (Cui et al., 2019). The rate of Chinese international online sales increased from about 10% in 2010 to 40% in 2015 (Wang, Wang, and Lee, 2017). In year (2020), the turnover reached RMB 12 trillion, representing 37.6% of Chinese international trade (Wang, Wang, and Lee, 2017). This unprecedented growth relies on Chinese online selling platforms, which attract world consumers influenced by Chinese product brands' affordable prices. Arousing, a growing interest among IOCs (Giuffrida et al., 2017) in purchasing Chinese product brands directly via Chinese online sales platforms. However, despite the unprecedented success of CIOS and its importance in the spread of Chinese product brands toward the world, past studies have focused only either on its share in Chinese international trade, either on factors affecting the success of online sales from the perspective of buyers and or sellers (e.g., reputation, product quality, price, reliability in terms of order fulfillment). For instance, while the market share of CIOS has been increasing continuously in recent years, the negative influence of taxes, logistics

costs, and seller fraud is undermining that growth (Wang et al., 2017; Li and Xing, 2016). For that reason, Giuffrida et al. (2017) think that logistics services and seller fraud are significant obstacles to CIOS development and consumer purchases through CIOS since they increase buyers' perceived risk (Guo et al., 2018). Mou et al. (2019) explored consumers' criticisms. They found that factors such as communication, seller management, product tracking, description, and logistics time, are among the most crucial factors for both seller and buyers.

Although previous studies have mainly concentrated on comprehending factors that participate in the smooth running of the CIOS from the buyer and seller perspective; however, these works remain mainly associated with factors related to the internal environment of the transaction or seller external environment (e.g., law, regulation). Very limited studies have focused on the external environment from the buyer's side. More precisely, the socio-economic environment, motivating, to some extent, IOCs purchasing decision. Therefore, this study is intended to understand the influence of IOCs' socio-economic environments in their choice preferences and the purchase behaviors of Chinese product brands. More precisely, this study seeks to find out the impact of Countries' Level of Economic Development (CLED) on consumer choice preferences and purchase behaviors of Chinese brands.

Consumer choice in the IOS is a composite process that requires several stages due to the high level of uncertainty during the purchase process and the transaction's nature. IOCs worry more about the transaction process than consumers of domestic e-commerce (Lin, Li, and Lee, 2018). As a result, IOCs use a step-by-step choice strategy (choice of the e-retailers, desired product brands, and logistics services). For that reason, this study added the effect of these three main stages representing the internal transaction environment to the impact of the CLED on consumers to examine consumer choice preferences and purchase behaviors for Chinese brands. To put it simply, this study modelled the IOC's purchase decisions based on the transaction factors and countries' macroeconomic data. This study set is about only the choice preferences of Chinese mobile phone brands since mobile phones. The study focuses on it because Chinese mobile phones and accessories are the most sold products from the framework of CIOS to IOCs (Tsinghua University 2017). Theoretically, studies on CIOS lack comprehension regarding IOC's purchase behavior based on their economic environment. Besides, the marketing literature lacks rigorous research on international buyers' choices of different Chinese brands selling the same categories of products in the CIOS framework. Therefore, this study on consumers' choice preferences and purchasing behaviors among Chinese brands utilized an MLM model. Our basic idea is that consumers from various economic settings will prefer and choose Chinese brands (manufacturing the same product categories) depending on their CLED. Strizhakova and Coulter (2015) highlight that countries' socio-economic environment influences consumers' preferences. In other words, consumers from different socio-economic backgrounds will behave differently regarding choice preferences and purchase behaviors.

The main contribution of this study is to integrate, in addition to internal transaction factors, factors related to the consumer countries' socio-economic environment to explore how these factors influence the purchase behaviors and choice preferences of consumers between Chinese brands. The results showed that CLED does influence consumer choice preferences. That result has substantial implications for IOS's e-stores in general, but above all, those of CIOS selling Chinese product brands in their stores. Consider a Chinese firm that sells exclusively Chinese

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product brands to the IOCs through IOS platforms. Such an enterprise might be interested in understanding the impact of CLED on consumers purchasing behavior and choice preferences. In that case, our model provides information on what sellers must do in such transactions.

The study is structured as follows. We first focus on four core streams of literature to examine previous works on CIOS and how our study extends those works. Then, we present our theoretical framework and the development of the hypothesis. Next, we describe data, variables and expose the detailed statistics. From there, we build the MLM model of the IOCs' choice decisions about Chinese product brands, analyze the results, and discuss the implications for the management. Finally, we end the study with the conclusions, limitations, and suggestions for future research.

2. LITERATURE REVIEW

2.1 The State Of CIOS

The rapid development of Chinese domestic online sales has opened up new perspectives for CIOS (Wang, 2018). According to Wang (2018), since 2013, CIOS's continuous development has sparked changes in the Chinese online market and business world. It has influenced China's international trade market and changed the exchange model between Chinese companies and international customers (Liu et al., 2015). Increasingly, Chinese companies and brands are entering this new market, which is becoming the new commercial trend, replacing traditional international trade. According to Li and Xing (2016), by 2013, the retail of CIOS reached $ 15 billion out of a total volume of transactions reaching over $200 billion and involving about 200,000 Chinese companies. In 2013, a report on CIOS made by PayPal projected that the online purchase through CIOS of goods labelled "made in China" by consumers from markets like Germany, the U.S., Australia, Brazil, and the U.K reached about $21.878 billion in 2018 (Li, and Xing 2016). Likewise, other studies focused on the state of the CIOS framework and its impact on economic growth. In this direction, Fang (2017) presents the state of CIOS by comparing different CIOS marketplaces and commercial models related to it and examining solutions concerning essential barriers opposing CIOS development (e.g., customs clearance problems). He and Xu (2018) reviewed the situation of CIOS and its innovative aspects, such as the profit model, marketing, and supervision model. They have shown that since the advent of this new market, it is continuously expanding by offering Chinese companies and brands more and more opportunities outside their borders. Therefore, its innovation must be typified by enhancing the competitiveness and marketing model through logistics and supply chain development. However, although CIOS has undergone impressive growth, it still faces difficulties (e.g., trust, cost, long delivery time, and purchasers' bad experiences). As a result, many researchers have been interested in it from various perspectives, focusing on the transaction environment factors.

Factors of the transaction environment

According to Zhong (2019), three main subjects are related to the CIOS field. Namely, the intention to utilize the CIOS of both buyer and seller (e.g., Mou, Ren, Qin, and Kurcz 2019), the logistic factors (e.g., Giuffrida et al. 2017), and government policies (laws, regulations) (e.g., Li and Xing 2016). In this perspective, previous research concentrated mainly on comprehending

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factors participating in smooth transactions from the buyer and or seller's perspectives. In other words, transactional factors related to the buyers' and or sellers' sides and the factors of regulation of the selling framework have been the most studied in the previous works. In this regard, factors such as payment, perceived value, trust, and individual attributes constitute the most prominent factors highlighted in most research.

Concerning the transactional factors from the seller side, Wang et al. (2017) investigate the effect of CIOS on China's international commerce from the angle of cost of the transaction through a model of comparative advantage. They found that the impact of CIOS on China's international trade can be positive if the costs' adverse effects are compensated. Cui et al. (2019) studied factors that worry sellers during the transaction process. They concluded that trust, perceived benefit, cost, and the service quality of selling platforms constitute the crucial transactional factors that preoccupy sellers and the reasons for their engagement in CIOS platforms. They have shown that the success of CIOS is also based on sellers' behaviors and their decision to be engaged on the CIOS platforms. Guo et al. (2018) examine the effect of seller confidence on buyers concerning the perceived risk of chargeback fraud. They found that the perceived integrity reinforces sellers' trust, reducing chargeback fraud perceived risk. They have shown that when sellers see that they are protected from buyers' fraud, that increases their trust by mitigating the perceived risk of chargeback fraud.

External environment factors related to sellers: logistics, regulations, and cost

In the IOS framework, the seller side's transactional environment plays a crucial role in seller engagement and consumer confidence. As a result, some studies have focused on sellers' external environment issues, such as logistics, laws, regulations, and government policies. With the emergence of CIOS, the Chinese government has paid great attention to CIOS to strengthen Chinese companies' competitiveness and brands operating in that industry and their role in China's international trade (Chen, Wang, and Xu 2018). Li and Xing (2016) show that factors such as logistics, regulations, and taxes strongly influence the development of CIOS and constitute real issues that must be remedied. Utilizing an e-commerce company as a case study, Chen, Wang, and Xu (2018) highlighted that factor such as political, economic, technical, and social favour the development of CIOS. However, there are still operational issues regarding the standardization between Chinese sales platforms and a lack of innovation. According to Zhenhua and Qiang (2015), CIOS is enjoying unprecedented development, although crucial issues remain. They have shown that issues such as product inspection, clearance, taxes, poor industrial credit, lack of supervision, and difficulties in resolving disputes obstruct CIOS development.

Accordingly, the Chinese government has set up a set of policies to solve those issues and promote CIOS development (Li and Xing, 2016; Wang et al., 2017). Li and Xing (2016) highlighted that those policies had encouraged the emergence of numerous businesses in the CIOS framework, which have rapidly increased the market share of CIOS. Li (2017) examined the implementation of the measures related to taxes from a customs perspective. He showed that CIOS could become a competitive framework through reforms reinforcing Chinese product brands and companies' power beyond borders. Among the measures taken by the Chinese government to support the development of the CIOS are those in favor of the development of the logistics of CIOS (Xu and Liang, 2018). To this end, several studies on CIOS have been conducted to

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understand the main obstacles related to logistics and how to solve them. Thus, through analyzing the benefits and drawbacks of the warehouse outside China, Xu and Liang (2018) made propositions about the overseas warehouses to develop the sellers' activities through CIOS platforms. They proposed, given the cost of warehouses abroad, the construction of selling platforms' self-built overseas warehouses to facilitate goods' shipment. He and Xu (2018) propose to innovate the CIOS by improving logistics services and supply chains. Giuffrida et al. (2017) reviewed studies related to the logistics of CIOS to outline new directions for future work associated with CIOS development. They identified a set of domains that must be studied for CIOS development. e.g., the shape of the distribution structure of CIOS and logistics outsourcing.

Another aspect that has focused researchers' attention has been mainly understanding the factors participating in the success of CIOS from the buyer's side. In studying the combined effect of factors influencing the buyer's intentions to repeat their purchase, Mou, J., Cohen, J., Dou, Y., & Zhang (2017) showed that factors such as offerings of purchases with lower prices and perceived value strongly affect consumers repurchase intentions. Similarly, Guo et al. (2018) have shown that consumers' trust during the transaction is a fundamental factor in consumers' choice preferences and purchases. Likewise, Fong and Burton (2008) highlighted that e-store quality and word of mouth are among the factors influencing purchasers' purchase decisions. As we can see from the above studies, no study has yet been carried out on the buyers' external transaction factors. Consequently, this study concentrates on that aspect to investigate its effects on consumers' choice preferences and purchase behaviors among Chinese product brands in the CIOS framework.

External environment factors related to Buyers: Socio-economic environment

This study focuses exclusively on understanding Chinese mobile phone brands' purchases through consumers' CLEDs' factors and the internal transactional factor. Chinese mobile phone brands have several ranges of products on Chinese international online sales platforms for sale. As a result, CIOs are faced with several choices concerning the type of product brand to purchase or choose under their purchasing power since these consumers come from different economic and social backgrounds. In the context of national e-commerce purchases, buyers' choices have been studied based on internal transaction factors related to buyers and/or sellers. However, other factors that have not yet been studied are likely to influence buyers' decisions and purchase behaviors. Specifically, the buyers' side has external factors, such as factors related to their economic environments.

These external factors give an overview of consumers' preferences and behavior trends at the global level. Likewise, there is empirical evidence that consumers from the poorest countries and those from developed countries may not have the same trends in preferences and purchase behaviors. Most online shopping studies agree that differences exist between consumers concerning their conduct and choice preferences according to the country (Mahmood, Bagchi, and Ford, 2004). Previous work has also highlighted consumers' choice preferences directed by their countries' economic backgrounds (Strizhakova and Coulter, 2015). According to Russell and Russell (2010), consumers' living environment development levels are associated with consumers' brand choices tendencies. Therefore, one could assume that consumers' choice tendencies in developed countries will differ from those of developing or emerging countries regarding Chinese mobile phone brands. However, to our knowledge, no study has yet tried to explore IOCs'

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preferences and purchase behaviors about Chinese brands based on CLED. Therefore, research is needed to determine IOCs' choice preferences and purchase behaviors based on CLED.

Theoretical Development and Hypotheses

The primary purpose is to remedy the previous literature's limitations by studying the buyer's external transactional environment's effect on the choice preferences and purchase behaviors of Chinese mobile phone products sold through Chinese CIOS platforms. The study seeks to determine the effect of the buyer's socio-economic environment on their choice preferences and purchase behaviors among Chinese brands. Accordingly, to highlight the importance of the buyers' economic environment in their preferences and choices among Chinese brands, we also analyze the effect of the internal transaction factors associated with the step-by-step choice strategy. That is to say, retailers' choice on the selling platform, the choice of product brand, the choice of logistics service, and their relationships with the buyer's economic environment. Since a buyer's economic environment influences his buying strategy and choice of internal transaction components, we associate consumers' socio-economic background with internal transaction factors by relying on socio-economic theories to build the conceptual framework. The first part of the conceptualization is built on the transaction's external environment, founded on variables characterizing the buyer's economic environment, such as the Gini index and countries' economic status, to analyze the buyers' choice preferences and purchase behaviors for Chinese product brands. Because, as Kim et al. (2002) have pointed out, sometimes a consumer's choice of a product brand is simply a reflection of their social status and varies depending on their socioeconomic situation (Kim et al. 2002). Therefore, the socio-economic environment could influence (Kim et al., 2002) buying strategies, choice preferences, and purchase behaviors among Chinese mobile phone brands. In the second part of the conceptualization, we also considered the internal transaction factors impacting consumer choices and purchases during the transaction process.

Theoretical Framework

In global retailing, understanding international consumers' preferences and choice behaviors based on their social-economic status has always been a marketing challenge for sellers because of the socio-economic difference between countries (Bbenkele, 1986). Those differences between different countries raise issues about consumer behaviors and the foundations of consumer preferences. A customer may choose a given product brand not because the product brand provides performance benefits but because that product or brand can express the consumer's social status (Kim et al. 2002). Bearden and Etzel (1982) show that consumers' social status significantly influences consumers' decisions to buy products and brands for public use, such as phones. According to studies on socio-economic factors (e.g., Mahmood, Bagchi, and Ford, 2004) and identity status (e.g., Gürhan-Canli et al. 2018), consumers' preferences and purchasing behaviors vary according to the socio-economic context (Kim et al. 2002; Johansson and Moinpour, 1997). Jamalova and Milán (2019) analyzed the operating systems of mobile phones for the effect of socio-economic variables (such as HDI and GDP) on developed and developing countries' consumers' buying decisions about mobile phones. They concluded that the socio-economic environment is essential for measuring consumers' purchasing behavior and buying capacity. In other words, depending on the social-economic environment, consumers would prefer different classes of mobile phone product brands in terms of price and quality, for instance, and behave

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differently during the purchasing process. Kim et al. (2002) studied consumer behaviors across various environments. They concluded that consumers are more preoccupied with prices and performance features in product assessments and buying decisions when incomes are low. In contrast, where incomes are available, consumers are more preoccupied with emotional features when evaluating products or brands.

Several other scholars analyzed consumer purchase behaviors at the macro and socio-economic levels in different countries and environments. For instance, Karakaş and Öztürk (2016) in Turkey highlighted that factors such as brand, price, and service affect consumers' phone buying behaviors. Uddin et al. (2014) in Bangladesh show that the physical attributes, pricing, and environment are crucial factors affecting Bangladeshian in buying a given mobile phone. In Malaysia, Shabrin et al. (2017) indicated that Malaysian consumers' mobile phone choices are impacted by product features, pricing, brand, and social environment. In examining transaction factors influencing Vietnam's consumers' choice decisions of mobile phone brands, Wollenberg (2014) shows a positive relationship between price, quality, advertising, brand perception, and consumer brand choices. Therefore, it would be understandable to add social-economic indicators to the internal transactional factors upon which IOCs rely when choosing between Chinese mobile product brands. Accordingly, we consider, on the one hand, socio-economic factors at a macroeconomic level, CLED. That is to say, the GNI index, the Adjusted Human Development Index (AHDI), and Country status in terms of development level (Income). On the other hand, the internal transactional variables, such as price, logistics, and quality, and the variables controlling each country's market conditions (that is, the popularity of each brand). Therefore, based on external transaction indicators and internal transaction factors, we adopt a conceptual framework (Figure.1) that includes the following indicators (factors): External factors of the transaction from the buyer side (EFT), Countries' Market Conditions (CMC), and Internal factors of the Transaction (IFT).

*******Insert Figure 1 about here*******

Factors of CLED. The economic development of an environment is considered an essential element in understanding consumers' purchasing behavior. According to Jamalova and Constantinovits (2020), from a macroeconomic point of view, indicators that highlight the level of economic development of an environment are essential factors in studying consumer behaviors and preferences. These macroeconomic indicators provide an overview of the socio-economic development level to comprehend citizens' purchasing power and purchasing behavior at national level. Accordingly, in this study, we adopt as factors of CLED the following social-economic factors: the GNI index, the Adjusted Human Development Index (AHDI), and Country status in terms of development level based on their income level.

According to the United Nations, the Inequality-Adjusted Human Development Index (IAHDI), contrary to the Human Development Index (HDI), measures the actual level of development in a given country. It constitutes the real index to measure the development status in terms of easy access to basic infrastructures and technology such as schools, universities, hospitals, the internet, houses, roads, and food. A high IAHDI means that the country's people can live a comfortable, healthy, and long life with smooth and high access to technology and knowledge. Therefore, it constitutes an essential element in understanding consumers' purchase behaviors within a country. However, studies conducted to analyze consumer buying behavior or intention

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at the macroeconomic level have only used the HDI. For instance, Njoh (2018) utilized HDI to examine and show a positive relationship between HDI and the internet access level and mobile phone purchase in Africa. With HDI, Jamalova and Milán (2019) have analyzed and shown a positive relationship between iPhone's market share and country development levels but a negative relationship between the Android market share and developing countries. However, in this study, instead of HDI, we utilized IAHDI to evaluate the influence of that factor on consumer purchases of Chinese mobile phone brands globally. Accordingly, the study hypothesizes that:

H1: IAHDI factor has a positive effect on IOCs choice preferences between Chinese mobile phone brands.

A hundred years ago, the Italian scholar Corrado Gini developed a computing method based on wealth distribution within countries called the Gini index. Researchers widely accepted that indicator and usually used it to measure the distribution of wealth and economic development within a given country (Gastwirth, 1972). For instance, James (2016) used it to identify the purchase tendencies of the mobile phone market in developing countries. The value of the Gini index ranges from 0 to 1, or 0 to 100%. A higher Gini index (1 or 100%) signifies a higher wealth distribution inequality, while a Gini of 0 or 0% means perfect disparities in wealth distribution (Credit Suisse-Research Institute, 2017). Accordingly, we utilized that socio-economic factor in the model. Hence, we hypothesize that:

H2: Gini index has a positive effect on IOCs choice preferences between Chinese mobile phone brands of the study.

According to Jamalova and Milán (2019), income is essential in explaining consumers' purchasing power and preference toward a given product brand. Kalba (2008) and Jamalova and Milán (2019) show that income level is one of the main factors that highlight differences in purchasing products like mobile phones in countries worldwide. In emerging countries, the income level has been used to explain mobile phone buyers' purchasing power and preferences (Jamalova and Milán, 2019; Jamalova and Constantinovits, 2020). Jamalova and Milán (2019) and Jamalova and Constantinovits (2020) show that the number of low-cost mobile phone owners within countries differs according to income levels. Numerous studies have highlighted that product purchases like mobile phones are affected by income (e.g., Reid, 2018; Jamalova and Constantinovits, 2020). For instance, Reid (2018) shows that in 2017, about 30% of the US adults with low income did not own a mobile phone. James (2016) has shown that the spread of mobile phones in emerging countries is related to income. Therefore, it is evident that there could be differences between countries in their preferences and purchases of Chinese mobile phone brands based on their economic development level.

Income level is a factor attributed by the World Bank to countries each year. It is used to evaluate and compare the economic development levels of the countries each year. The World Bank classifies countries according to their income development levels (e.g., low, lower-middle, upper-middle, and high-income levels). However, this study summarized countries into three statuses or income development levels. That is to say, the low and lower-middle have been classified as developing countries, and the upper-middle and high-income levels are classified respectively as emerging and developed countries. Accordingly, we integrated into the model the World Bank classification based on the income level to indicate the economic power and countries' purchasing power. Thus, to study the influence of countries' income levels on consumer preferences and purchases. We expect that the income levels might explain the reasons for consumers' purchase and preference behavior among Chinese mobile phone brands. As a result,

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the CLED, reflected by the consumer countries' social and macro-economic influence, should affect consumers' preferences and choice decisions. Thus, given the above arguments, we propose the following hypotheses:

H3: Countries development status has a positive effect on IOCs choice preferences between Chinese mobile phone brands.

The popularity-Index. The buying and choosing of a product brand such as a mobile phone is a decision that should not depend only on the influence of macroeconomic factors. It could also be related to several internal factors specific to each business environment that deserve to be considered, such as brands' popularity in each country. To account for that factor's influence on consumers' purchases, we integrated into the model an additional variable resulting from a combination of two factors specific to the brands' environment in each country to control the differences between countries. As the purchase is made online, consumers usually learn about the product's brand features before engaging in the buying process. To this end, their privileged means are social media such as Facebook through the official Facebook page of the brand in the country. According to Richard and Guppy (2014), many companies see Facebook and other social media as an effective strategy to interact with consumers since it benefits both companies and consumers. Xie and Lee (2015) find that brands' social media activities positively affect the probability of consumers' brands' purchases. In studying the effect of social media marketing on consumers' brand purchase intention and brand loyalty, Balakrishnan, Dahnil, and Yi (2014) have shown that social media sites such as Facebook are an effective way of promoting a product's brand purchase intention. They highlight that social media enables companies to reach more consumers faster and efficiently by making brands more popular. Consequently, we introduced in the model a popularity index to control the popularity of each brand across each country concerned by the study. Accordingly, the study proposes the following hypothesis:

H4: The popularity-Index positively affects IOCs' choice preferences of the study's Chinese mobile phone brands.

H4a: The popularity-Index has different impacts on IOCs' choice preferences of the study's Chinese mobile phone brands.

H5: The effects of CLED's factors are more robust than that of the popularity-Index in the CIO's choices and preferences between the study's Chinese mobile phone brands.

The effects of Internal Transaction Variables on IOCs preferences and choices. IOS transactions differ from domestic e-commerce with the risk of purchasing fake product brands. Hence, consumers are preoccupied with internal factors such as e-retailer quality, logistics, transaction cost, and product quality associated with the purchasing process.

According to Rose, Hair, and Clark (2011), the influence of the quality of an e-store on the consumer can create opportunities for positive experiences for the e-store. The conduct quality of a store can attract and provide reassurance on the quality of products and the ability to meet the needs of consumers (Ponzi, Fombrun, and Gardberg, 2011). Accordingly, many studies examined the importance of conduct's quality of store or seller (Rice, 2012). For instance, Standifird (2001) discussed the significance of the seller's behaviour and highlighted that it positively influences consumer purchases. A seller's conduct and product quality are criteria for consumers' choices in the shopping framework (Kim and Krishnan, 2015). However, few studies have concentrated on the importance of product quality (Kim and Krishnan, 2015) in online consumer buying conduct. However, in the online shopping framework, a product's actual quality is not observed until

consumers receive the purchased product brand. Besides, consumers are increasingly interested in quality product brands (Strizhakova, Coulter, and Price, 2011). Research has documented that quality is a significant element that guides consumers' brand choices (Madden et al., 2012) and makes consumers confident. In this context, Yu and Yuan (2019) point out a link between consumers' purchases of a given product brand and consumers' confidence in terms of quality. In the IOS framework, an e-seller with ethical conduct is viewed by buyers as selling quality products because some dishonest e-retailers sell fake products in place of original products. An e-store with good behavior is considered a warranty to get a quality product from that shop. Therefore, we combined e-store quality and product quality under one single attribute. Accordingly, the study hypothesizes that:

H6: Store-product quality index has a positive effect on IOCs choice preferences of Chinese mobile phone brands.

Logistics Factors: Delivery Time. The link between logistics and online shopping has always been analyzed primarily from a domestic perspective. However, IOS logistics are different from the national ones. Research has demonstrated that logistics attributes significantly impact the e-shopping process. For instance, Nguyen, Leeuw, and Dullaert (2018) and Rao, Griffis, and Goldsby (2011) have shown that on-time delivery significantly affects consumers' buying habits and intentions. Rao, Griffis, and Goldsby (2011) and Nguyen, Leeuw, and Dullaert (2018) have identified it as essential in e-customers purchases. Thus, we incorporated the factor estimated delivery time (EDT) into the model. Accordingly, we propose the following hypothesis:

H6a: Estimated Delivery Time (EDT) positively affects IOCs' choice preferences of Chinese mobile phone brands.

Transactional cost. Consumers' satisfaction with the cost is critical for improving the relationships between the seller and client. In this view, the price has always been considered a significant factor in buying a product (Khan, Kulkarni, and Bharathi, 2014) and consumer satisfaction. In mobile phone purchases, Bento (2012) has highlighted those low-price devices are more attractive to developing countries consumers. Mohammed (2018) has shown that the price was essential for mobile phone purchasers in Jordan. According to Jamalova and Constantinovits (2020), even if a mobile phone's average cost is $120, it is still not affordable for many consumers in underdeveloped countries since consumers from those countries are sensitive to high prices. However, in IOS, the price is not the only concern of the consumers. Consumers also pay customs duties. However, since each country has its own customs fee and process, which is different from one country to another, we did not consider customs fees. We combined the logistics fees with the product brand's price to get the transaction cost since e-retailers sometimes propose free shipping fee services for IOCs. Accordingly, the study hypothesizes that:

H6b: The transaction cost has a positive effect on IOCs choice preferences of Chinese mobile phone brands.

THE INDUSTRIES OF CHINESE MOBILE PHONE BRANDS AND DATA DESCRIPTION

The industries of Chinese mobile phone brands

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The universe of Chinese phone brands is vast. Out of the 76 brands worldwide (Li, 2019), China accounts for more than 12 mobile phone brands (Li 2019), such as Huawei, Xiaomi, Meizu, Oppo, VIVO, and Coolpad. However, for this current study, we focused on just four of them because of their popularity within the Chinese international selling platform considered in this study. These brands entered the global market with a strategy of affordable prices, increasing their market shares across different world regions, especially across developing and emerging countries with low-income levels. According to Dedrick and Kraemer (2016), in 2016, Huawei mobile phone products were sold in around 170 countries. During the second quarter of 2018, Huawei was China's top mobile phone brand, with 28.1% of the market share. By the third quarter of 2018, Huawei and Xiaomi were classified among the Chinese market's top five mobile phone brands (Li and Wei, 2019). At the same time, Huawei sold about 30.72 million mobile phones with a share of 28.6%, followed by Xiaomi, which sold about 12.61 million products with a share of 11.7%, while the selling of Meizu products dropped by nearly 53% (Li and Wei, 2019). By 2014, Xiaomi, the fourth-largest phone brand in the world, manufacturing high-specification phones but at a low cost, was classified as the biggest mobile phone company in the Chinese market (Tabassum and Ahmed, 2020). Since the third trimester of 2018, it has become the top phone brand in India's mobile phone market, with 12.1 million phones sold and representing about 28.8% of the market share (Tabassum and Ahmed, 2020). According to Yu et al. (2020), between 2008 and 2014, the market share of Coolpad increased from 1% to 9.88% in the Chinese market.

Data Description

Transaction data has been collected from 54 online retail stores using a Google spreadsheet programming language and Octopus Software within a CIOS platform. These 54 online stores are made up of brand stores as well as individual stores. These stores sell in B2C modes. The dataset consists of four Chinese mobile phone brands purchased by consumers from 68 countries during 2017 and 2018. China has more than 12 domestic mobile phone brands. However, we decided to focus on the four most popular mobile phone brands sold from China to IOCs on the international online selling platform considered in this study. The dataset accounts for: Huawei (7.43%), Xiaomi (75.12%), Meizu (3.84%), and Coolpad (13.61%). Therefore, this model deals with the choice preferences and purchase behaviors of IOCs between 4 alternatives. Thus, the dataset is structured as follows: The individual-specific variables comprise the IOCs' features. These features are based on social-economic variables of countries that have consumers involved in transactions. Thus, the data set contains the Gini index, the Inequality-Adjusted Human Development Index (IAHDI), and the World Bank classification concerning countries' income levels. We collected these parts of the data from the World Bank website and the United Nations development program website. Based on the World Bank's classification of countries' income levels, we grouped the consumer countries into three groups or income levels (which we named status). Namely, (Developed country=1, Developing country=2, Emerging country=3). The dataset also contains the world regions where consumers placed the orders (region). However, we did not incorporate the effect of the consumer's region within the model. We utilized these socio-economic variables to measure consumers' CLED and their effects on consumers' choice preferences and purchase behaviors after testing numerous combinations of countries' socio-economic attributes. Only those three attributes were statistically significant. The dataset contains the combined market share of the four brands per country and how it varies across countries (min and max market shares). We got this part of

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the data set from https://gs.statcounter.com/vendor-market-share/mobile/2016. However, we did not account for those market shares in the model.

The dataset also contains the variable popularity index. To build that popularity index, we relied on the follower numbers of official Facebook pages and the number of each brand's official stores in each country. Indeed, we started with the idea that two sources are crucial for the popularity of a brand in a country, among several sources: advertising and easy access to the brand's products. We utilized the follower numbers of official Facebook pages and the number of each brand's official stores in each country to capture the effect of advertising and easy access to the brand's products, respectively. We have assumed that as purchases are made online, one or more official brand stores in the country could assist buyers in after-sales service concerning eventual mechanical issues on the purchased product brands. And allow consumers to buy spare parts and accessories for their products. Therefore, the availability of official brand stores in each country could influence consumers to choose one brand over another. We used Google Maps to locate each brand's official stores in each country. Thus, we quantified the popularity-Index of each brand in each country as follows.:

$$\text{Popularity-Index} = \frac{X1+X2}{2} \qquad (0)$$

Where $X1$ quantifies the effect of the brand's advertisement through the brand's official Facebook page from number of followers and $X2$, the number of the official stores of brand in-country quantifies brands' service facilities' effect. Table1 presents the list of variables within the dataset and descriptive statistics across world regions.

*****Insert the Table 1 about here*****

The alternative-specific variables comprise each alternative's features: store-product quality index (stquty), product brand price, and Estimated Delivery Time (EDT). The store-product quality index indicates the relationship between store quality (i.e., store management quality) and product brand quality. Because of the fake product brand sales, consumers sometimes utilize the e-store quality and the number of products already purchased to evaluate the product brand's quality and originality before purchasing. Accordingly, when consumers see that those factors have high values compared to other stores, they assume that the e-store has good quality, and thus the products in that store are likely to be original. Accordingly, we linked the influence of the quality of the e-store within which product brands are located to the quality of product brands sold. We first measured the quality of the e-store from the average of three attributes (communication rate, product description rate, and shipping speed rate). Then, we multiplied it by the number of product brands already purchased before the consumer's purchase to get the store-product quality Index. Concerning the transaction cost, we combined the logistics fees with the product brand's price to get the transaction cost.

The Choice Context and the Strategy of IOCs Choice Preferences

This model's general context is that consumers from various countries with different economic development levels must choose between 4 Chinese mobile phone brands. In the IOS framework,

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consumer choice is a multistage process that requires at least three stages (store choices, product brand choices, and logistics service choices). That is due to the high level of uncertainty consumers face in the purchase process, such as fake product brand purchases. Consequently, it is essential to understand the choice behaviors of IOS. In the IOS, consumers are more worried than domestic e-commerce consumers during the transaction process (Lin, Li, and Lee, 2018). Accordingly, the IOCs' strategy at the beginning of the buying process consists of identifying the elements and factors that will reinforce their belief about the purchase process. Thus, the consumers use previous buyers' experiences to form an expectation of the transaction stages. Therefore, if the model is not built on the different steps consumers face in the purchase process, the model may lead to erroneous results. We assume that consumers purchase just a unit of a product brand at a time. Thus, we didn't consider the quantity of the product purchased. This assumption may be acceptable, given the nature of the transaction we are analyzing. In this type of transaction, consumers usually purchase one unit of product brands at a time.

Modeling the IOCs Product Brands Choice Decisions

Let us assume that an IOC is looking for a peculiar Chinese mobile phone product brand through a CIOS framework. Thus, the consumer faces several uncertainties before consumers making a choice. Let us group all of these uncertainties into three steps. That is to say, the uncertainty about *the store-product quality* factor (SP_{ki}). This uncertainty quantifies the level of e-store quality related to product quality, assuming that a quality e-store is likely to sell higher quality product brands as IOCs think. Since that is the way, most IOCs evaluate product brands because of the fake products. Then, we have *the logistic factor* (L_{ki}) and *cost factor* (P_{ri}).

Let us assume that the three levels of uncertainty are related to the vector of attributes A_{ki}perceived by IOC for a given alternative k. Likewise, it has been well established by several studies that those factors have a considerable influence on products sold in online shopping (e.g. Rice, 2012; Luan et al., 2016**;** Reichheld and Schefter, 2000; Nguyen, Leeuw, and Dullaert, 2018; Suk, Lee, and Lichtenstein, 2012) and especially in case of the IOS (e.g. Guo, et al., 2018**)**. We can write, then that

$$A_{ik}=A(\beta: SP_{ik}, L_{ik}, P_{rik}) + \varepsilon_{ki} \quad (1)$$

$$U_{ik}=W(\beta: SP_{ik}, L_{ik}, P_{rik}, C_i) \quad (2)$$

Where C_i is the vector of characteristics of the consumer i. W is the function of the available choices' attributes and the decision-maker attributes, U_{ki} is the utility function and ε is the random part. Behavioral economists and psychologists have well shown that choice goes further than a pure product feature, and thus, it has social implications (He et al., 2014). Therefore, we assume that attributes of each IOC i (That is to say his socio-economic profile), equal to his CLED attributes. Since it may reveal the buying power of different countries' consumers and their choice patterns. That is especially the case of the IOS, where the same product features and the same prices are exposed to consumers from various countries in terms of development level and wealth. We can, and then have:

$$C_i=V_i \quad (3)$$

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V_i is the vector representing attributes of CLED plus Popularity index of each brand within each country. We, thus, integrated the effect of CLED V_{i1}, as well as the popularity Index of each brand within each country (V_{i2}) into the utility function (Equation 4)

$$U_{ik,t} = W(\beta: SP_{ik}, L_{ik}, P_{rik}, V_i) \quad (4)$$

As *an Individual variable*, V_i Changes for buyers from various countries, but its values are held constant across buyers from the same country. We assume that different consumers make buying decisions based on their CLED, which is different from one country to another. Accordingly, we assume that the purchasing power offered by their CLED leads them to choose product brand that matches their lifestyle and economy level. Therefore, the utility of a consumer i for each alternative k can be written as follows:

$$U_{ik,t}=\beta_{1ik}+\beta_{2i}A_k+\beta_{3i}V_i \quad (5)$$

β_1 , is the constant term; β_2 are vectors of estimable parameters corresponding to outcome specific attributes. $A_{k,t}$ are the vectors of attributes across brands as experienced by the consumer i . And β_3 are vectors of estimable parameters corresponding to *the individual variables*. Accordingly, the coefficients β can be estimated based on IOCs' purchase data. Thus, the probability P_{ik} of the consumer i choice for a given alternative k can be estimated.

$$P_{ik} = \frac{e^{U_{ik}}}{\sum_r e^{U_{ir}}} \quad (6)$$

Here r represents the total number of brands (option) available for consumers' choices.

Restricted model: Estimate utility coefficients

In this model, we want to estimate consumers' choices of product brands without economic development attributes or with associations of variables of socio-economic developments. Then, later compare with the estimated result of the full model and see the impact of the economic development variables on consumer choices. Thus, we broke down the socio-economic attributes as follows:

$$V_i = v_{1i} + v_{2i} + v_{3i} + v_{1i} + v_{4i} \quad (7)$$

Where v_{1i}, $v_{1i,}$ and v_{3i} , respectively, denote countries' status, the wealth Gini index of countries, and the IAHDI of countries. And $v_{4i} = V_{i2}$ represent the popularity factor. As a result, one may write the utility equation as follows:

$$U_{ik,t}=\beta_{1ik}+\beta_{2i}A_k+\beta_{3i}(v_{1i} + v_{2i}+ v_{3i} + v_{4i}) \quad (8)$$

We used Maximum Likelihood Estimation to estimate the model. According to the Hausman test of IIA we made, we did not violate the IIA assumption (Table 2 below)

*****Insert the Table 2 about here*****

*****Insert the Table 3a about here*****

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*****Insert the Table 3b about here*****

*****Insert the Table 4 about here*****

RESULTS, DISCUSSIONS AND MANAGERIAL IMPLICATIONS

Consumer Choice Preferences and Consumers' CLED

From the IOCs' buying strategies and the uncertainties related to them, we modelled the relationship between consumer choice preferences and consumers' CLED. In Table 2, we see that the entire model's likelihood ratio index is higher than that of the restricted models 1, 2, and 3. That means the presence of IAHDI, Gini Index, and Status (Income) improves the model. Likewise, the correlation matrix from Table 4 shows a positive and significant influence of the Gini index (0.37; $p<0.01$) and Status (0.41; $p<0.01$) on brands' choice preferences, respectively. However, it shows a negative and significant relationship between brands' preferences and IAHDI (-0.86; $P<0.01$). That -0.86 value signifies that the more the inequalities increase in socio-economic development, the fewer consumers are willing to purchase the study's product brands. Therefore, hypothesis 1(H 1) fails to be supported. However, hypotheses 2 (H2) and 3 (H 3) are supported. Table 2 shows that the entire model's likelihood ratio index (-0.4481) is higher than that of the restricted model 8 (0.4074) (model without "popularity index "). That means the presence of the popularity index influences the model fit in improving it. In Table 4, one observes an adverse effect of the Popularity Index on consumers' choice preferences (-.114; $p<0.01$). As a result, one can conclude that hypothesis 4 (H 4) fails to be supported. The reason for the negative effect of the Popularity Index on consumers' choice preferences is that when brands are popular in a country, their product brands are available in the local markets. Consumers might prefer to buy the product brands on the local market than on the international online market. In Table 2, we see that the likelihood ratio index of the restricted model 7 (0.4182) is higher than that of the specified model 8 (0.4074) (model without "popularity index"). That means the combined effect of the CLED's factors is more robust than that of the popularity Index in the choice preferences of consumers. Hence, hypothesis 5 (H5) is supported.

The Probability of Each Brand Choice

In MLM, coefficients show the relationship between each outcome probability and the base category's probability. However, since the probabilities of all results must be 1, they can be challenging to interpret. With the marginal effect, one can accurately evaluate the importance of the connection between variables and choices of alternatives. Hence, using the Average Marginal effects (AME) of each transaction variable, we can understand each of them influences each brand choice's probability.

As one may see, we have two tables (Table 3a & 3b); one for the Marginal effects and the second for predictive probabilities. In Table 3a, the AME presents the effect on the probability of each brand choice for each continuous variable. However, Table 3b shows the predictive probability of each brand choice. In Table 3a, one observes that the AME of the popularity-Index on the probability of each brand choice has different and significant effects according to the brand. That is to say, we have AME of Coolpad (-20.7; $p< .001$), Xiaomi (20.1; $p< .001$), Huawei (-0.725; $p< .05$), and Meizu (1.4; $p< .01$). Therefore, the hypothesis 4a (H 4a) is supported. Following Table

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3a, we observe that the AME of the internal transaction factors has different effects according to the brand. From Table 1, we observe that Xiaomi (7490 products sold) and Coopad (1357 products sold), the two brands which have the highest market share in terms of sales, also have a positive and significant AME from the attribute of the store-product quality (Table 3a). In Table 4, we observe a positive and significant effect of the store-product quality index on consumer brand choice preferences (.080; P<0.01). Hence, we can conclude that hypothesis 6 (H6) is supported. In Table 2, we observe that Huawei was the most purchased brand from the developed countries (20%) compared to Xiaomi (11%), Coopad (10%), and Meizu (1%); with an EDT of Huawei high than that of Coolpad (Figure.3). However, in the Emerging countries, Coolpad was the most purchased (82% of its purchases) than Huawei (74% of its purchases), with an EDT of Huawei higher than that of Coolpad. From Table 4 and Figure.3, we see that although Xioami has a higher market share in sales, its EDT is higher than those of Coolpad, Huawei, and Meizu in developed countries. Likewise, the EDT of Xiaomi is higher than that of Meizu in emerging countries. In Table 4, we see no impact of the EDT on brand choice preferences. Accordingly, one could conclude that although the EDT differs depending on consumer locations; however, it does not influence the consumers' choice preferences of product brands. Therefore, hypothesis 6a (H 6a) fails to be supported.

We can see from Figure.2 that the probability of the Huawei brand's purchases increases with the cost. For the Xiaomi brand, purchases also increase with the cost until the cost reaches a certain level; then, the probabilities start to decrease. However, concerning Meizu and Coolpad brands, the less popular brands, according to Table 3b, when the costs increase, the likelihood of purchasing those brands decreases. These two opposite observations could indicate that the more the brand is popular, the more the IOCs use its price as a criterion to verify its quality before making a purchase. However, when the cost is too high, it can undermine the purchases, as we see from the case of Xiaomi. E-stores need to manage that variable carefully. Therefore, e-retailers must be aware of that; in pricing the product brands to avoid slowing down the concerned brands' spread. Indeed, the two most popular brands are, respectively, Huawei and Xiaomi. They are more known worldwide than Coopad and Meizu (Table 3b). One can see from Table 4 that there is a negative and significant influence of the cost on brand choice preferences (-0.459, **P<0.01). Hence, Hypothesis 6b (H 6b) fails to be supported.

*****Insert Figure 2 about here*****
*****Insert Figure 3 about here*****

Managerial Implication

With the initiative (One Belt and Road), China thus enjoys exceptional support to remain the largest IOS market. In this context, consumers from different countries increasingly purchase various Chinese product brands through CIOS, especially mobile phone product brands. However, e-retailers, which serve as one of the gateways between Chinese mobile phone brands towards world consumers, do not consider the IOCs' origin in their managerial approach. Especially consumers' CLED. Unfortunately, that is the case in online selling in general. A $250 Chinese mobile phone, for instance, is sold to New York consumers as well as Philippines's consumers at the same price level without considering the economic weakness that may face Philippines consumers. However, this study proved that the CLED impacts IOCs' decisions. As a result, only consumers from countries with a specific economic development level can make purchases in the

IOS. E-retailers and Chinese mobile phone brands need to adapt their product brands' prices to their managerial approaches to match the international customers' profiles. i.e., economic development of the customers' countries.

This study showed that the link between e-seller behaviors and IOCs' perception concerning the quality of product brand influences brands' purchases. Accordingly, e-sellers on CIOS selling platforms must understand that their behaviors can undermine consumers' perception of the quality of the selling product brands. This study showed that the purchase probability of popular brands (Huawei and Xiaomi) and less popular brands (Coopald and Meizu) respectively increases and decreases with the cost. These two opposite observations could indicate that the more the brand is popular, the more the IOCs use its price as a criterion to verify its quality before making a purchase. However, when the cost is too high, it can undermine the purchases, as shown in the case of Xiaomi. Therefore, e-retailers must be aware of that; in pricing the product brands to avoid slowing down the concerned brands' purchases.

Our work aims to contribute to the spread of Chinese brands. Accordingly, in investigating countries' macroeconomic data along with internal transaction factors, we assist brands and e-retailers in knowing the choice preference patterns of countries according to their economic development levels. Accordingly, our proposed study enables brand managers, online retail stores, and online sales platforms to learn from IOCs' purchase attitudes and behaviors based on economic development levels. Our findings could contribute to the worldwide spread of Chinese products from a global perspective if practitioners consider our suggestions. Managers can use our model to reduce the impact of IOCs concerns (e.g., stores-product brand qualities) and e-retailer misbehavior on the Chinese brands' global performance. Mobile phone brand managers or e-retailer managers could use our findings to know what marketing strategies to adopt according to consumers' locations or consumer's country status. For instance, concerning the less popular Chinese brands and less purchased by developed countries' consumers (e.g., Meizu), managers of these brands can utilize our conclusions to improve their brands' image in these regions. Through the effect of e-store-product quality, we showed how the behaviors of e-retailers could undermine the perception of product quality in the e-stores and spread of Chinese mobile phone brands. Therefore, our work can be excellent support for Chinese mobile phone brands and e-retailers. Primarily assist e-retailers in improving their activities by adapting their managerial behaviors to the consumer's country development level, thus contributing to the spread of Chinese brands worldwide.

Conclusions, Limitation and Suggestions for Future Research

To our knowledge, this is the first in the research of CIOS to develop a discrete choice model that integrates the countries' economic development at the individual choice level to uncover interactions between consumer choice preferences and the development level of the consumer's country. Consequently, accounting of countries' economic development level in consumers' preferences introduces a new dimension in understanding IOCs' behaviors and attitudes towards Chinese mobile phone brands. Such a model can be used to guide e-retailers and brand managers. The model offers a more unobstructed view of IOCs' choices and purchase behaviors of Chinese mobile phone brands. To some degree, this study has certain limitations despite the theoretical and practical contributions to the IOS literature. The first limitation concerns the nature of the data.

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Data study data was secondary data collected from only one Chinese international online selling platform. Accordingly, further research could be carried out by gathering data from other or several international selling platforms in China. Alternatively, utilizing, if possible primary data to carry out the investigation. Our study could extend in these ways. Future research can study the impact of the Chinese government project named One Belt One Road Initiative on Chinese brands' spread.

REFERENCES

Balakrishnan, B. K. P. D., Dahnil, M. I. and Yi, W. J. (2014) 'The Impact of Social Media Marketing Medium toward Purchase Intention and Brand Loyalty among Generation Y', *Procedia - Social and Behavioral Sciences*, 148(January), pp. 177–185. doi: 10.1016/j.sbspro.2014.07.032.

Bbenkele, E. C. K. (1986) *Understanding Consumer Behaviour in the Less Developed Countries : an Empirical Investigation of Brand Loyalty in Zambia. Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Business and Management Studies.*

Bearden, W. O. and Etzel, M. J. (1982) 'Reference Group Influence on Product and Brand Purchase Decisions', *Journal of Consumer Research*, 9(2), p. 183. doi: 10.1086/208911.

Bento, N. (2012) *Historical diffusion of mobile phones and its impact on energy demand: Findings and outlook*. Available at: www.iiasa.ac.at.

Chen, Y., Wang, M. and Xu, Y. (2018) 'The Current Situation and Measures of Cross-Border E-Commerce in Cosmetics Industry: Case Study of Company ABL', *Open Journal of Business and Management*, 06(02), pp. 265–278. doi: 10.4236/ojbm.2018.62019.

Credit Suisse - Research Institute (2017) 'Global Wealth Databook 2017', *Credit Suisse*, (November), p. 165. doi: 10.1038/nbt0910-907.

Cui, Y., Mou, J., Cohen, J., and Liu, Y. (2019) 'Understanding information system success model and valence framework in sellers' acceptance of cross-border e-commerce: a sequential multi-method approach', *Electronic Commerce Research*. doi: 10.1007/s10660-019-09331-0.

Dedrick, J. and Kraemer, K. (2016) 'Intangible assets and value capture in value chains: the smartphone industry', *World Intellectual Property Organization*, 41(November), pp. 1–56.

Fang, Y. (2017) 'Current Situation, Obstacles and Solutions to China's Cross-Border E-Commerce', *Open Journal of Social Sciences*, 05(10), pp. 343–351. doi: 10.4236/jss.2017.510028.

Fong, J. and Burton, S. (2008) 'A cross-cultural comparison of electronic word-of-mouth and country-of-origin effects', *Journal of Business Research*, 61(3), pp. 233–242. doi: 10.1016/j.jbusres.2007.06.015.

Gastwirth, J. L. (1972) 'The estimation of the Lorenz curve and Gini index', *Review of*

Economics and Statistics, 54(3), pp. 306–16.

Giuffrida, M., Mangiaracina, R., Perego, A., Tumino, A. (2017) 'Cross-border B2C e-commerce to Greater China and the role of logistics: a literature review', *International Journal of Physical Distribution & Logistics Management*, 47(9), pp. 772–795. doi: 10.1108/IJPDLM-08-2016-0241.

Guo, Y., Bao, Y., Barnes, S. J., Le, K. (2018) 'To sell or not to sell: Exploring sellers' trust and risk of chargeback fraud in cross-border electronic commerce', *Information Systems Journal*, 28(2), pp. 359–383. doi: 10.1111/isj.12144.

He, L., Wang, M., Chen, W., and Conzelmann, G. (2014) 'Incorporating social impact on new product adoption in choice modeling: A case study in green vehicles', *Transportation Research Part D: Transport and Environment*. Elsevier Ltd, 32, pp. 421–434. doi: 10.1016/j.trd.2014.08.007.

He, W. and Xu, Y. (2018) 'Cross-Border Electronic Commerce Development Present Situation and the Innovation Research in China', *American Journal of Industrial and Business Management*, 08(08), pp. 1825–1842. doi: 10.4236/ajibm.2018.88124.

Jamalova, M. and Constantinovits, M. G. (2020) 'Smart for development: Income level as the element of smartphone diffusion', *Management Science Letters*, 10(5), pp. 1141–1150. doi: 10.5267/j.msl.2019.10.027.

Jamalova, M. and Milán, C. (2019) 'The Comparative Study of the Relationship Between Smartphone Choice and Socio-Economic Indicators', *International Journal of Marketing Studies*, 11(3), p. 11. doi: 10.5539/ijms.v11n3p11.

James, J. (2016) *The Impact of Mobile Phones Developing Inequality in on Poverty and Countries*. doi: doi:10.1007/978-3-319-27368-6.

Johansson, J. K. and Moinpour, R. (1977) 'Objective and Perceived Similarity of Pacific Rim Countries', *Journal of World Business*, 12(Winter), pp. 65–76.

Kalba, K. A. S. (2008) 'The Adoption of Mobile Phones in Emerging Markets: Global Diffusion and the Rural Challenge', *International Journal of Communication*, 2(November 2007), p. 31.

Karakaş, G. and Öztürk, D. (2016) 'Analysis of the Factors Affecting the Mobile Phone Purchasing Decisions of University Students in Turkey City of Ordu Example', *Journal of Life Economics*, 3(1), pp. 23–42. doi: DOI: 10.15637/jlecon.121.

Khan, M., Kulkarni, A. and Bharathi, S. V. (2014) 'A Study on Mobile Phone Buying Behavior Using an Image-based Survey', *Procedia Economics and Finance*. Elsevier B.V., 11(14), pp. 609–619. doi: 10.1016/s2212-5671(14)00226-3.

Kim, J. O., Forsythe, S., Gu, Q., Moon, S.J. (2002) 'Cross-cultural consumer values, needs and purchase behavior', *Journal of Consumer Marketing*, 19(6), pp. 481–502. doi:

10.1108/07363760210444869.

Kim, Y. and Krishnan, R. (2015) 'On product-level uncertainty and online purchase behavior: An empirical analysis', *Management Science*, 61(10), pp. 2449–2467. doi: 10.1287/mnsc.2014.2063.

Li, F. (2017) 'Research on Customs Administration to Cross-Border Electronic Commerce Importation under Taxation Measurement', *American Journal of Industrial and Business Management*, 07(05), pp. 581–590. doi: 10.4236/ajibm.2017.75043.

Li, H. and Wei, Y. (2019) 'Analysis the Impacting of "User Experience" for Chinese Mobile Phone's Brands Market Changing', *Lecture Notes in Computer Science*, pp. 277–287. doi: doi:10.1007/978-3-030-23535-2_21.

Li, Y. (2019) 'Research on Huawei Mobile Phone Marketing Strategy Based on Market Segmentation Theory', 376 (Sschd), pp. 397–404. doi: 10.2991/sschd-19.2019.69.

Li, Y. and Xing, F. (2016) 'A Study on Credit System of Cross-Border E-Commerce from the Perspective of the Game Theory', *Information Science and Management Engineering IV-International Conference on Information System and Management Engineering trade*, (Isme), pp. 268–273. doi: 10.5220/0006448802680273.

Lin, A. J., Li, E. Y. and Lee, S. Y. (2018) 'Dysfunctional customer behavior in cross-border e-commerce: A Justice-affect-behavior model', *Journal of Electronic Commerce Research*, 19(1), pp. 36–54.

Liu, X. and Liu, R. (2017) 'The Comparison and Analysis of China Cross-border E-commerce Business Model ', 142, pp. 85–88.

Luan, J., Yao, Z., Zhao, F. T., and Liu, H. (2016) 'Search product and experience product online reviews: An eye-tracking study on consumers' review search behavior', *Computers in Human Behavior*, 65, pp. 420–430. doi: 10.1016/j.chb.2016.08.037.

Madden, Thomas J., Martin S. Roth, and W. R. (2012) 'Dillon Global Product Quality and Corporate Social Responsibility Perceptions: A Cross-National Study of Halo Effects', *Journal of International Marketing*, 20(1), pp. 42–57.

Mahmood, M. A., Bagchi, K. and Ford, T. C. (2004) 'On-line shopping behavior: Cross-country empirical research', *International Journal of Electronic Commerce*, 9(1), pp. 9–30. doi: 10.1080/10864415.2004.11044321.

Mohammed, A. B. (2018) 'Selling smartphones to generation z: understanding factors influencing the purchasing intention of smartphone', *International Journal of Applied Engineering Research*, 13(6), pp. 3220–3227. Available at: http://www.ripublication.com.

Mou, J., Cohen, J., Dou, Y., & Zhang, B. (2017) 'Predicting buyers' repurchase intentions in

crossborder e-commerce: A valence framework perspective', *Proceedings of the 25th European conference on information systems (ECIS)*.

Mou, J., Ren, G., Qin, C., and Kurcz, K. (2019) 'Understanding the topics of export cross-border e-commerce consumers feedback: an LDA approach', *Electronic Commerce Research*, (0123456789). doi: 10.1007/s10660-019-09338-7.

Nguyen, D. H., de Leeuw, S. and Dullaert, W. E. H. (2018) 'Consumer Behaviour and Order Fulfilment in Online Retailing: A Systematic Review', *International Journal of Management Reviews*, pp. 255–276. doi: 10.1111/ijmr.12129.

Njoh, A. J. (2018) 'The relationship between modern Information and Communications Technologies (ICTs) and development in Africa', *Utilities Policy*, 50(C), pp. 83–90. doi: DOI: 10.1016/j.jup.2017.10.005.

Ponzi, L. J., Fombrun, C. J. and Gardberg, N. A. (2011) 'RepTrak Pulse: Conceptualizing and Validating a Short-Form Measure of Corporate Reputation', *Corporate Reputation Review*, 14(1), pp. 15–35. doi: 10.1057/crr.2011.5.

Reichheld, F. F. and Schefter, P. (2000) 'E-Loyalty: Your secret weapon on the web', *Harvard Business Review*, 78(4), pp. 105–113.

Reid, A. J. (2018) *The Smartphone Paradox*, *The Smartphone Paradox*. doi: 10.1007/978-3-319-94319-0.

Rice, S. C. (2012) 'Reputation and uncertainty in online markets: An experimental study', *Information Systems Research*, 23(2), pp. 436–452. doi: 10.1287/isre.1110.0362.

Richard, james and Guppy, S. (2014) 'Facebook: Investigating the influence on consumer purchase intention', *Asian Journal of Business Research*, 4(2), pp. 1–15. doi: 10.14707/ajbr.140006.

Russell, D. W. and Russell, C. A. (2010) 'Here or There? Consumer Reactions to Corporate Social Responsibility Ini- tiatives: Egocentric Tendencies and Their Moderators', *Marketing Letters*, 21(january), pp. 65–81.

Shabrin, N., Khandaker, S., Bin, S., Kashem, A., Hie, C. K. Susila, T. (2017) 'Factors Affecting Smartphone Purchase Decisions of Generation-Y', *The Journal of Contemporary Issues in Business and Government*, 23(1), pp. 47–65.

Standifird, S. S. (2001) 'Reputation and e-commerce: EBay auctions and the asymmetrical impact of positive and negative ratings', *Journal of Management*, 27(3), pp. 279–295. doi: 10.1016/S0149-2063(01)00092-7.

Strizhakova, Y., Coulter, R. A., & Price, L. L. (2011) 'Branding in a global marketplace: The mediating effects of quality and self-identity brand signals.' *International Journal of Research in*

Marketing, 28(4), pp. 342–351.

Strizhakova, Y. and Coulter, R. A. (2015) 'Drivers of Local Relative to Global Brand Purchases: A Contingency Approach', *Journal of International Marketing*, 23(1), pp. 1–22. doi: 10.1509/jim.14.0037.

Strizhakova, Y., Coulter, R. A. and Price, L. L. (2008) 'Branded products as a passport to global citizenship: Perspectives from developed and developing countries', *Journal of International Marketing*, 16(4), pp. 57–85. doi: 10.1509/jimk.16.4.57.

Suk, K., Lee, J. and Lichtenstein, D. R. (2012) 'The Influence of Price Presentation Order on Consumer Choice', *Journal of Marketing Research*, 49(5), pp. 708–717. doi: 10.1509/jmr.11.0309.

Tabassum, R. and Ahmed, S. (2020) 'Xiaomi invades the smartphone market in India', *Decision*. Springer India, 47(2), pp. 215–228. doi: 10.1007/s40622-020-00242-w.

Tsinghua University, National Engineering Laboratory For E-Commerce Technologies, Central University Of Finance And Economics, China Center For Internet Economic Researc, and DHGATE.COM (2017) *China Cross-Border E-Commerce (Export B2B) Report*.

Uddin, M. R., Zahan Lopa, N. and Md, O. (2014) 'Factors Affecting Customers' Buying Decisions of Mobile Phone : A Study on Khulna City, Bangladesh', *International Journal of Managing Value and Supply Chains*, 5(2), pp. 21–28. doi: 10.5121/ijmvsc.2014.5203.

Wang, P. (2018) 'On the Development of Cross-Border E-Commerce and the Transformation of Foreign Trade Model', *Modern Economy*, 09(10), pp. 1665–1671. doi: 10.4236/me.2018.910105.

Wang, Yu, Wang, Yi and Lee, S. H. (2017) 'The effect of cross-border e-commerce on China's international trade: An empirical study based on transaction cost analysis', *Sustainability*, 9(11), pp. 1–13. doi: 10.3390/su9112028.

Wollenberg, A. (2014) 'Consumer Behaviour in the Smartphone Market in Vietnam', *International Journal of Innovation, Management and Technology*, 5(6). doi: 10.7763/ijimt.2014.v5.550.

Xie, K. and Lee, Y. J. (2015) 'Social Media and Brand Purchase: Quantifying the Effects of Exposures to Earned and Owned Social Media Activities in a Two-Stage Decision Making Model', *Journal of Management Information Systems*, 32(2), pp. 204–238. doi: 10.1080/07421222.2015.1063297.

Xu, S. and Liang, J. (2019) 'Research on the Operation Mode and Countermeasure of Cross-Border E-Commerce Export Overseas Warehouse in China', in, pp. 213–222. doi: 10.23977/icidel.2018.028.

Yu, X. and Yuan, C. (2019) 'How consumers' brand experience in social media can improve

brand perception and customer equity', *Asia Pacific Journal of Marketing and Logistics*, 31(5), pp. 1233–1251. doi: https://doi.org/10.1108/APJML-01-2018-0034.

Yu, P., Shi, J., Sadowski, B.M., Nomaler, Ö. (2020) 'Catching Up in the Face of Technological Discontinuity: Exploring the Role of Demand Structure and Technological Regimes in the Transition from 2G to 3G in China', *Journal of Evolutionary Economics*. Journal of Evolutionary Economics, 30(3), pp. 815–841. doi: 10.1007/s00191-020-00673-9.

Zhang, Y. and Khare, A. (2009) 'The Impact of Accessible Identities on the Evaluation of Global versus Local Products', *Journal of Consumer Research*, 36(3), pp. 524–537. doi: 10.1086/598794.

Zhenhua, Y. and Qiang, S. (2015) 'Problems in Cross-border E-commerce Export Trade in China a Countermeasure Analysis', in *Proceedings of the 2015 International Conference on Education Technology, Management and Humanities Science*, pp. 848–854. doi: 10.2991/iemb-15.2015.175.

Zhong, X. (2019) 'Countermeasure Research on the Cultivation of Cross-border E-Commerce Merchants in Higher Vocational Colleges under the Background of " Internet Plus "', *Francis Academic Press*, pp. 570–576. doi: 10.25236/icem.2019.109

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Table.1
Summarize statistics

Variables	Mean	Std. Dev.	Min	Max	
Consumer's Region	5.285	1.212	1	14	
Country income level (Status)	2.716	0.655	1	3	
Inequality-adjusted human development index (iahdi)	79.894	8.873	44.8	91.7	
Wealth Gini Index (gini)	0.073	0.004	0.035	0.088	
Brand popularity Index	40581.66	115164.9	0	2702494	
The store-product brand quality index (stpquty)	35454.59	29619.87	9.66	101212.6	
Price	164.744	27.392	121	220	
Estimated Delivery Time (EDT)	23.948	6.408	0	60	
Market Share of brands per country	21.257	4.698	0.79	32.16	
Brands	Huawei	Xiaomi	Meizu	Coolpad	Total
Price ($)	184.95	169.17	128.41	139.55	164.74
Total unity sold	741	7490	383	1357	9971
Sale (%)	7.43	75.12	3.84	13.61	100
Market share ($)	13747.95	1267068	49180.65	189372.1	1519369
Country	51	59	12	50	68
Central America	13	7	1	28	49
Central Asia	12	4	0	15	31
Eastern Africa	1	0	0	0	1
Eastern Asia	0	6	0	8	14
Eastern Europe	1156	518	376	6422	8472
European union	105	127	5	812	1049
Middle East	0	1	0	0	1
Northern Africa	4	1	0	3	8
Northern America	9	21	0	49	79
Oceania	6	3	1	26	36
South America	24	42	0	79	145
Southern Africa	0	0	0	4	4
Southern Asia	20	11	0	25	56
Western Africa	7	0	0	19	26
Total sales	1357	741	383	7490	9971
Developed country (%)	10	20	1	11	11
Developing country (%)	8	6	10	5	6
Emerging country (%)	82	74	89	84	83
-	Coolpad		Huawei		
Status	gini	iahdi	gini	iahdi	
Developed country	72.05	0.08	71.12	0.08	
Developing country	58.07	0.06	53.95	0.07	
Emerging country	83.52	0.07	82.22	0.07	
	Xiaomi		Meizu		
	gini	iahdi	gini	iahdi	
Developed country	68.89	0.08	67.28	0.08	
Developing country	52.32	0.07	50.23	0.06	
Emerging country	83.21	0.07	82.86	0.07	

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Table.2
Measure of the MNL goodness-of-fit with likelihood convergence

Model	Log-likelihood convergence	Likelihood ratio index (Pseudo R2)
Full model	-4428.61	0.4481
Restricted model 1 (without "ihdi")	-4527.98	0.4357
Restricted model 2 (without "status)	-4554.94	0.4323
Restricted model 3 (without "gini ")	-4556.96	0.4321
Restricted model 4 (without "status&gini ")	-4598.25	0.4269
Restricted model 5 (without "ihdi&gini ")	-4612.07	0.4252
Restricted model 6 (without "status&ihdi")	-4668.24	0.4182
Restricted model 7 (without macro-economic variables)	-4678.42	0.4169
Restricted model 8 (without "popularity index ")	-4755.05	0.4074
Likelihood-ratio test	LR chi2(9) = 499.62; Prob > chi2 = 0.0000	
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 147.22 Prob>chi2 = 0.0000		

gini = Gini index; Iahdi = Inequality adjusted human development index; stpquty = store-product quality

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Table.3a
Average Marginal effect on the probability of each brand choice

	Coopald (4)	Huawei(1)	Meizu (3)	Xiaomi (2)
gini	8.069***	1.282**	-1.854***	-7.4976***
	(0.602)	(0.369)	(0.203)	(0.739)
stpquty	2.789***	-5.646***	-4.131***	6.988***
	(0.108)	(0.132)	(0.148)	(0.166)
Iahdi	-12.777***	-2.773***	2.963***	12.588***
	(1.04)	(0.603)	(0.534)	(1.310)
Edt	-0.132**	1.327	-0.186	-1.009
	(0.711)	(0.404)	(0.339)	(0.853)
Popularity index	-20.7***	-0.725*	1.4**	20.1***
	(1.25)	(0.333)	(0.403)	(1.2)

Note: Standard errors in parentheses. *p< .05 **p< .01 ***p< .001; **g**ini = Gini index; Iahdi = Inequality adjusted human development index; **r**epquty = reputation-quality; Edt = Estimated delivery time

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Table.3b
The predictive probability of countries' Status on each brand choice

Status	Coolpad (4)	Huawei (1)	Meizu (3)	Xiaomi (2)
Developed country	5.435	0.963	0.075	3.532
	(0.268)	(0.097)	(0.045)	(0.252)
Developing country	2.17	0.715	0.126	6.990
	(0.406)	(0.161)	(0.086)	(0.434)
Emerging country	1.203	0.673	0.445	7.679
	(0.031)	(0.027)	(0.026)	(0.045)
Average popularity-Index	0	1	2	3
Developed country	4551.139	184193.303	0	50945.130
Developing country	16807.054	37002.302	909.122	15362.235
Emerging country	42043.544	32286.813	1841.706	351.052
Total	32988.545	49471.589	1732.379	6624.541

Note: Standard errors in parentheses

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Table 4
Correlations

	gini	iahdi	status	popularity	st-pquty	cost	edt	brand
gini	1	.149**	.668**	-.086**	-0.017	-.159**	.093**	.037**
iahdi	.149**	1	-.179**	-.284**	-.031**	.147**	-.479**	-.086**
status	.668**	-.179**	1	-.299**	-0.001	-.205**	.498**	.041**
popularity	-.086**	-.284**	-.299**	1	.049**	.088**	-.138**	-.114**
store-product quality	-0.017	-.031**	-0.001	.049**	1	.216**	.038**	.080**
cost	-.159**	.147**	-.205**	.088**	.216**	1	-.162**	-.459**
edt	.093**	-.479**	.498**	-.138**	.038**	-.162**	1	0.016
brand	.037**	-.086**	.041**	-.114**	.080**	-.459**	0.016	1

**p<.01

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Figure.1
The conceptual framework

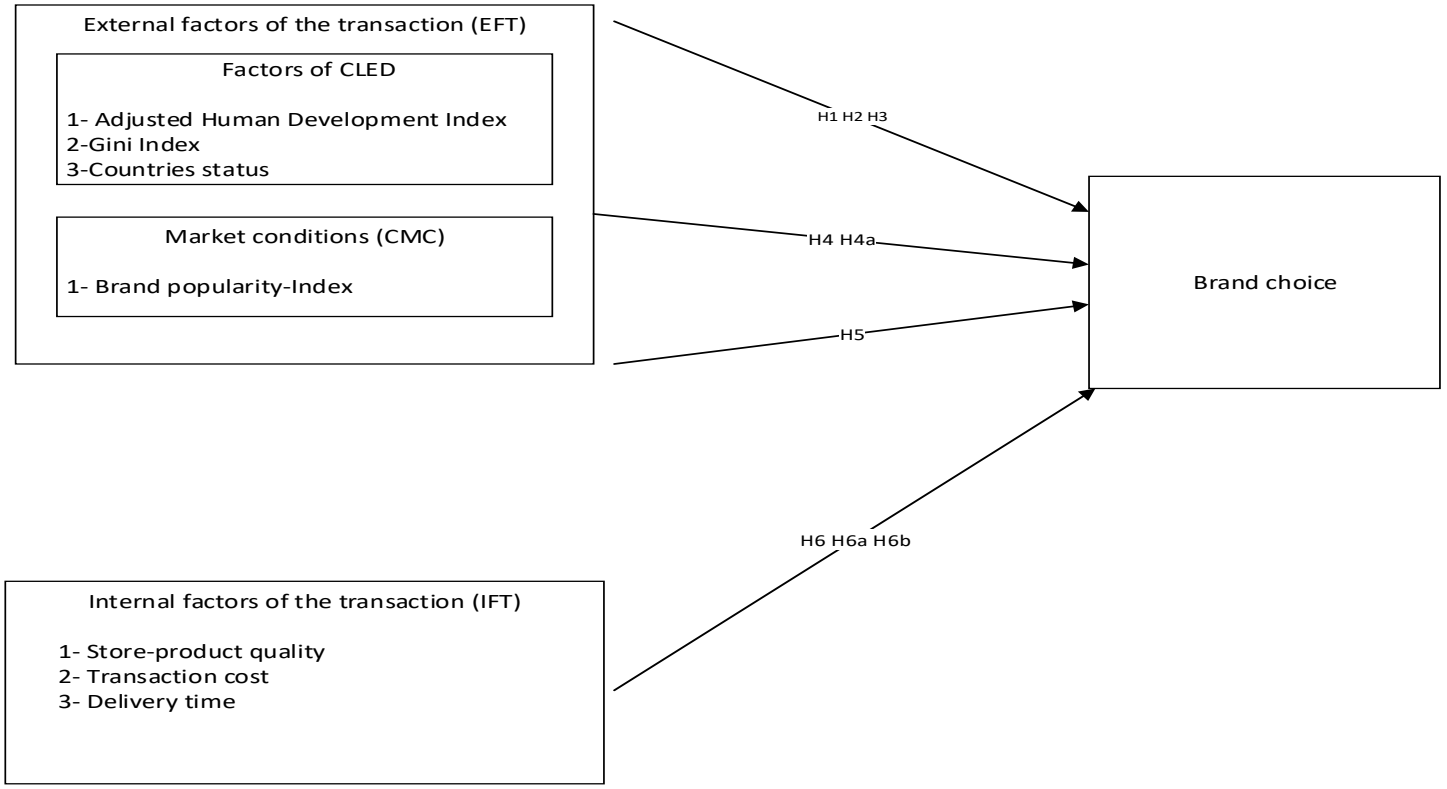

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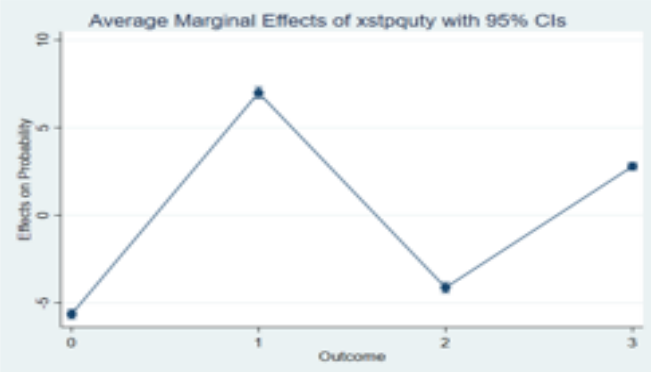
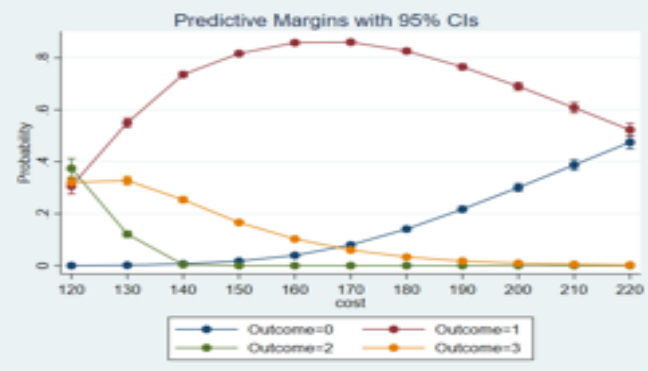
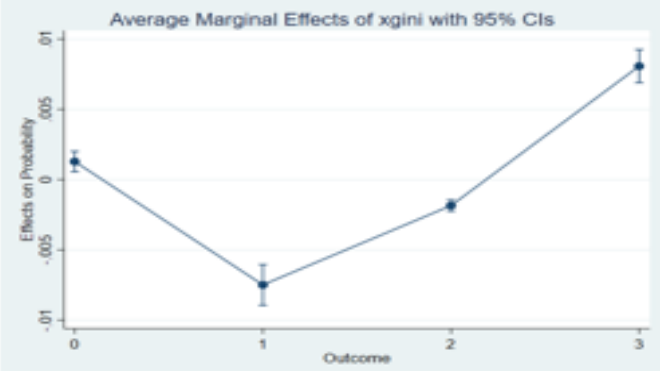
Figure.2
Average and predictive Margins



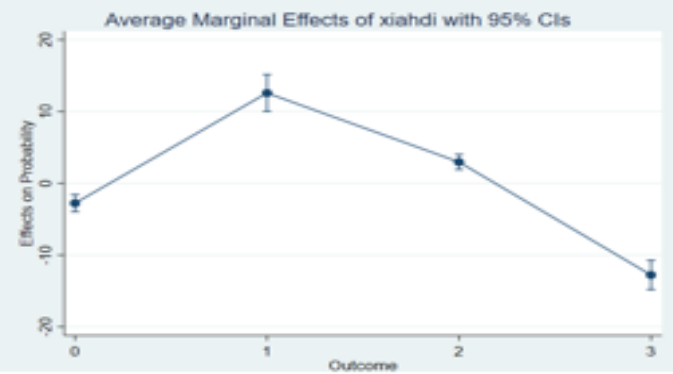
Store-product quality



Transaction cost



Gini index



IAHDI

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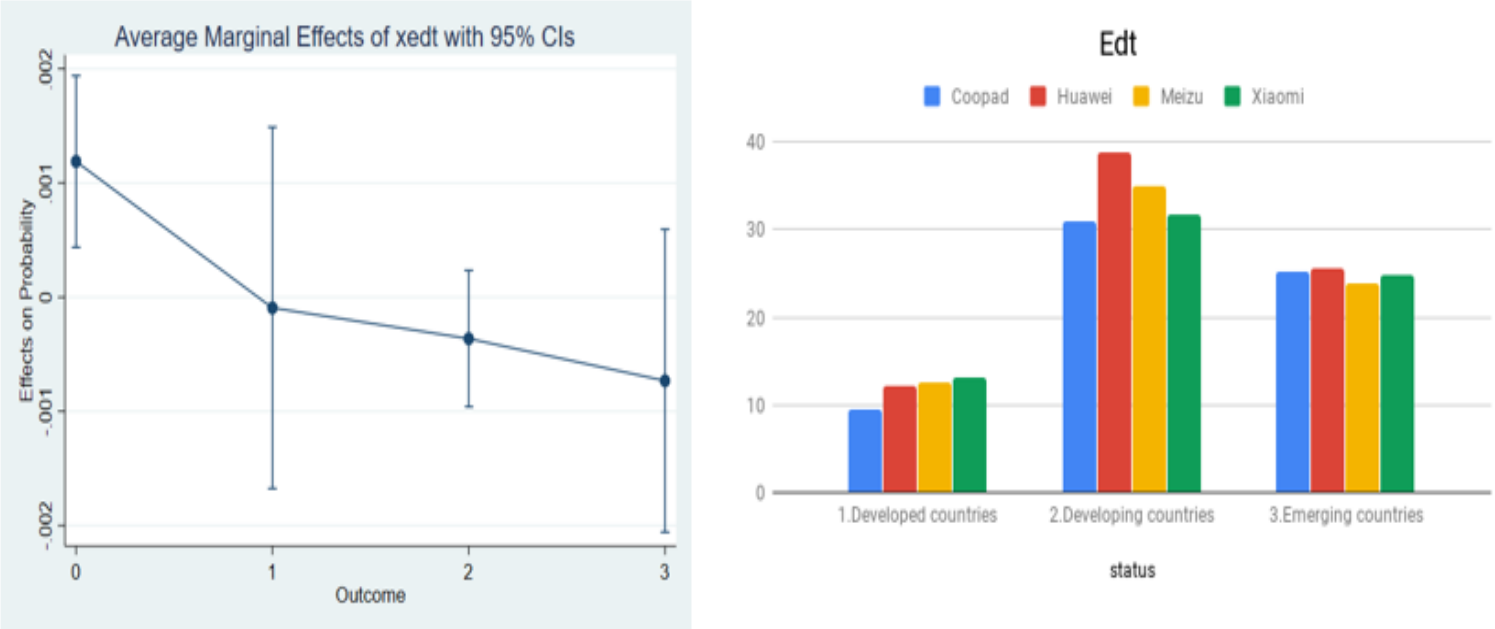
Figue.3
Effect of EDT on the choice preferences



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Appendix A

The log-likelihood convergence and pseudo-R-square allow the researcher to know how well a model evaluates consumers' choice preferences. Therefore, we compared the full model with several restricted models. As shown in Table.3, the full model has a better prediction than all of the restricted models. The full model's pseudo-R-square is 0.4481, while that of the restricted model 7 (without any socio-economic variable is equal to 0.4169). This result shows that the CLED's factors combined effect in the model increases in log-likelihood of the full MLM compared to the restricted model 7. The 0.4481 value signifies the MLM with the factors of CLED has a 44.81% gain in log-likelihood compared to the restricted model 7. Thus, as we have presumed, CLED's factors combined effect impacts consumers' choices and preferences. The log-likelihood ratio (Lr) measures one model's relevance over another. As the Lr test result shows (Table 3), we observe an LR chi-square (499.62) with a p-value significant at .001. It indicates that appending the variables of CLED together as predictor variables significantly improves the model fit. The result confirms that the combined effect of the CLED's factors influences IOCs' purchases and choices.

Analysis of Consumer Choices Tendencies

In this section, we analyze consumers' purchase tendencies toward Chinese mobile phone brands based on their economic background. Table 3a and Figure.2 show the AME of the Gini index negatively affects Xiaomi and Meizu's brand purchases. However, it positively affects Huawei and Coolpad purchases. It is important to remember that a high Gini index signifies a wealth distribution disparity. Accordingly, when one considers Figure.2, we see that the Gini index's AME on the expected probability of Xiaomi and Meizu is negative compared to competitors (Coolpad and Huawei). From Table 1 (below), one observes that the average Gini index of emerging countries which purchased Meizu (82.86) and Xiaomi (83.21) is lower than those of Coolpad (83.52). However, one can observe that in the emerging countries that these two brands realized their highest market shares (e.g., Meizu (89%) and Xiaomi (84%)) compared to Huawei (74%) and Coolpad (82%). That signifies that Meizu and Xiaomi were purchased in lower concentrated areas in terms of wealth than Coopald. Next, in terms of the Gini index, the emerging countries have a higher average (83.17) compared to developed (69.57) and developing countries (53.32). Accordingly, one can say that the more the Gini index increases, the more the expectation of choosing Meizu and Xiaomi decreases (fig 2; Table 1 (below); Table 3a). In other words, the expectation of purchasing Meizu decreases in an emerging country with a Gini too high. That means the distribution of wealth will be unequal concentrated only in a few households. Therefore, the remaining families will not be able to purchase the Meizu brand's products, which are less popular than competitors.

In Table 3a, we see that the AME of IAHDI has a significant effect on the expectation of choosing four study brands. With a negative impact on Coolpad and Huawei and a positive sign

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on Meizu and Xiaomi. In Figigure.2, we also see a positive AME on the probability of Xiaomi and Meizu's purchases. That is to say when the inequalities diminish and the diminution of the concentration of wealth. That means purchasing the Xiaomi and Meizu product brands is affected by the centralization of the wealth, as already stated. That is because these brands interest low-income households compared to competitors (e.g., Coolpad and Huawei). In Table 1, we observe that Meizu almost got no sales in regions with higher income (e.g., European Union and Northern America).

In the European Union region, Meizu got only five sales; in Northern America's region, 0 sales represent about 1% of the Meizu sales in developed countries. Concerning Xiaomi, the most sold brand in the study, it realized only 11% of its sales in developed countries. Accordingly, one observes that these brands realized their most notable performances in areas of relatively lower development levels. For instance, Meizu got 376 sales in Eastern Europe. Developing countries realized 10% of their sales, and in Emerging countries, 89% of their sales. Likewise, in Figure 2, we notice that Xiaomi and Meizu will be well appreciated in high development areas in terms of socio-economic development and low inequalities in terms of concentration of wealth. Therefore, the Xiaomi and Meizu brands must improve their marketing and image in high development areas in terms of socio-economic development and low inequalities in terms of concentration of wealth since the IOS is not an ordinary transaction in which any kind of consumer can be involved. It requires a certain lifestyle (e.g., Internet connection and computer skills).

As shown in Table 1, most purchases are made in Emerging countries. In Table 1, we observe that Huawei was the most purchased brand from the developed countries (20%) compared to Xiaomi (11%), Coopad (10%), and Meizu (1%). According to Table 3b, Huawei and Xiaomi are the most popular brands through the market structures (status) through the total popularity index of 3 four brands of the study. In developed countries, Huawei has the highest popularity index (184193.303), followed by Xiaomi (50945.130), Coolpad (4551.139), and Meizu (0). We can see from these results that the purchasing trends follow the popularity of brands. That means the more popular brands are in countries, the more the probability of purchasing those brands could increase. The quantity of Huawei product brands purchased in this model contradicts that brand's global nature. However, one could understand this contradiction from Table 3a and Figure.2. We can see from Table 3a that the AME of the store-product quality variable negatively impact the buying probability of Huawei and Meizu, which are the two less purchased brands in the study (Table 1) (7.43% for Huawei, and 3.84% for Meizu). Indeed, Huawei product brands have been stored in lower-quality stores. That is why Huawei has been less purchased despite its global nature. Accordingly, brand managers and e-stores on CIOS platforms must understand that store quality and product quality are somehow related in consumers' minds due to the fake product sold.