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Demographic and Cultural Factors Influencing the Adoption of B2C E-Commerce in SCO Region

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Abstract

Background: As one of the main intergovernmental organizations in Eurasia, Shanghai Cooperation Organization (SCO) is the one of the biggest e-commerce markets in the world. In this paper we studied the individual demographic and also national cultural factors of the ecommerce users of SCO countries and identified them from both national and personal sides.Method: We used 5 individual factors including gender, age, education, employment, income data from The World Bank Global FINDEX dataset and 6 cultural factors including power distance, individualism, masculinity, uncertainty, long term orientation data from Hofstede's country's cultural indexes to see the detailed definition of E-commerce users in SCO countries. Totally The World Bank Global FINDEX dataset included 11227 face-to-face interviews of SCO population.

Index terms— e-commerce, B2C, developing countries, shanghai cooperation organization, SCO

1 Introduction

ncreasing from 400 million in 2000 to more than 4.72 billion users as of April 2021 1 Digitalization speed, substantial growth of internet penetration, and recently, the restrictions because of COVID-19 has accelerated the e-commerce growth and according to United Nations Conference on Trade and Development (UNCTAD) news , the Internet is a worldwide network, which is used not only for communication but also for business. One of the internet benefits and tool to promote new business forms is e-commerce, which has entered our lives in the late 1990s and became essential during COVID-19 lockdowns. If in the 1990s e-commerce was just an economic activity conducted via electronic connections, in 2020 it was described as a process of production, sale, distribution and advertising of products online. **??**RolfT, 2006; UN ESCAP report, 2019) 2 , in 2019 the worldwide e-commerce sales raised up to $26.7 trillion, which is equivalent to 30% of global GDP, and 4% up from 2018.As e-commerce is characterized as one of the main criteria for information technology revolution (Nanehkaran, 2013) and heart of Sustainable Development Goals 3 1 https://wearesocial.com/us/blog/2021/04/60-percent-of-the-worldspopulation-is-now-online 2 https://unctad.org/news/global-e-commerce-jumps-267-trillion-cov id-19-boosts-online-sales 3 http://sdg.iisd.org/news/unctad-reviews-covid-19-impact-on-e-com merce-digital-trade , many researchers have developed e-commerce adoption and implementation frame works related to consumers and online enterprises. Consumer related researches are focusing on behavioral issues and segmentation; the researches on enterprises are mostly analyzing store features, credibility and reputation, and online shopping tools (Farid et. al, 2016). However, the prevailing amount of these ecommerce studies are focusing on consumers and enterprises of developed countries, and very few are conducted on developing or least developed countries. **??**Richard et.al, 2008; **??**obert Jeyakuamr, 2009; Japhet E et.al, 2010) As developed countries are mostly hyperdigitalized, developing and least developing countries are lagging behind and in danger to fall behind being unable to transform data into a digital value (World Bank note, 2020). The lack of sufficient infrastructural, socioeconomic and sometimes even the absence of national strategies as well as reliable scholarly researches have formed a major obstacle in e-commerce adoption and usage in developing countries (Kathryn M., 2011). Moreover, there is a lack of researches about cultural influence combined with demographics data on ecommerce adoption and usage focusing on developing countries or even on regional blocs. Herein, the Shanghai Cooperation Organization (SCO) region,

which has almost half of the world's population from developing and transition economies, becomes the perfect niche for research.

The objective of this paper is to examine B2C ecommerce adoption in member states of SCO, by integrating demographic characteristics with Hofstede's cultural dimensions. The next section contains a literature review, followed by a methodology that comprises used data and its sources. The fourth section is a discussion of findings and the final section includes conclusion, followed by a list of references.

2 II.

3 Literature Review

The definition of e-commerce has been changing over time and it is not completely clear. For example, if at the beginning e-commerce was just an economic activity conducted via electronic connections (Rolf T, 2006), in 2000 it was described as a computer transaction of ownership and/or rights to use goods or services **??**Atrostic et.al, 2000). The growth of internet penetration and technological development has given a broader opportunity to e-commerce and soon it became the main measure for economic communication and information technology revolution (Nanehkaran, 2013). In 2015 Shahriari (Shahriari, S., **??**hahriari et.al, 2015), have broadened the previous definitions and stated that e-commerce nowadays consists of data transfer, collection systems, and electronic funds followed by internet marketing, online transaction processing, and therefore supply chain and inventory managements.

As the functions and activities of e-commerce have extended, the market participants were divided into e-commerce types, such as business with business (B2B); business with consumers (B2C); business with government institutions (B2G); public authorities with government institutions and firms (G2G) and consumers with each other (C2C), etc (MargaritaI ?orait? et. al, 2018). Even though e-commerce has various types, only two of them are prevailing among market participants: according to the report (UNCTAD report, 2021), B2B transactions amounted to 83%, B2C to 16% of the total e-commerce sales in 2018.

While e-commerce is considered a poverty reduction tool its implementation remains uneven across the globe **??**Kwak J et.al, 2019). Scholars have conducted various researches on e-commerce usage and most of them have considered economic, technological, and political issues as major influencing factors. **??**Kamel et.al, 2015;Yi-Shun, 2008; **??**ariyawasam et.al, 2008). Moreover, in order to know if country is ready to partake in electronic activities and to obtain benefits scholars analyze the electronic readiness (e-readiness) of countries. The most cited e-readiness variables include: infrastructure (technology, connectivity, social and cultural), environment (legal, business, and policy), consumer and business adoptions, and following services. (Danish, 2006 **??**hang G et.al,2011). Based on these articles it can be said that intention to purchase online is positively correlated with time spent online. Moreover, the regular online purchase increases trust towards online platform, leads to higher purchase and therefore reduces perceived risk. **??** Gibbs **??**Gibbs et.al, 2003) concluded that B2C e-commerce is driven by local consumer markets, which combines consumer individual characteristics and national culture. Despite the fact that cultural factors were cited as significant influences on e-commerce adoption **??**Bingi P et.al, 2000; **??**lexander Y et.al, 2006), very few studies were conducted on this matter. **??** Moreover, there is a lack of researches, which integrate the demographic and cultural factors of e-commerce adoption not only in developing countries but also in regional blocks, such as the Shanghai Cooperation Organization.

E-commerce in Shanghai Cooperation Organization member states Shanghai Cooperation Organization (SCO), one of the main intergovernmental organizations in Eurasia, was established in 2001 and has eight member states: China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan Pakistan, and India. As home to nearly half of the world's population, SCO member states cover three-fifths of the Eurasian continent and contribute about 20 percent to world GDP 4 . While its original main focus was to ensure regional stability and security in the region and to fight against "terrorism, extremism, and separatism" (Stephen G, 2018), the SCO recently has more committed to fostering deeper economic integration and socio-economic sphere between member states 5 Since 2019 SCO is taking measures to develop e-commerce in the SCO region: one of the main topics of the talks held in Tashkent on November 2, 2019, was the prospect of economic partnership among SCO member states and the adoption of the trade and economic cooperation program until 2035 . 6 . Following that in November 2020, member states have signed the "Statement by the SCO Heads of State Council on Cooperation in the Digital Economy". Furthermore, on 7 th June 2021, SCO Secretariat and Alibaba Group delegation had an online meeting, whereas SCO Secretary-General Vladimir Norov stated that member states are developing draft documents aimed at unlocking potential and using opportunities to increase digitalization in the region 7 As a member state and country with CNY 38 trillion e-commerce transactions in 2020 . 8 , China is actively proposing to develop the digital economy in the SCO region (LiKeqiang, 2020). Considering the fact that China has launched a "Digital Silk Road" initiative in 2015 and signed cooperation agreements with 16 countries within it (Steve Feldstein, 2020), China experience will be a priority in SCO; however, it is uncertain whether SCO member states have the capacity for adoption and diffusion of such e-commerce experience.

which indicates the readiness of a country to support online shopping. UNCTADB2C e-commerce index includes the following variables: account ownership at a financial institution or with a mobile-money-service provider (percentage of population ages 15+); individuals using the internet (percentage of population); postal reliability index; secure internet servers (per 1 million people). Table 1 . Russia has the highest internet

penetration among member states and its B2C e-commerce sales reached USD31 billion, which is a 1.9 percent contribution to the country's GDP in 2019. Lately, the JP Morgan E-commerce payment trends report revealed that the Indian e-commerce market has experienced explosive growth and despite only 4.3 percent of online shoppers, e-commerce sales reached US61.1 billion, which accounts for 3 percent of total Indian retail sales in 2019.

Pakistan and Kazakhstan's B2C e-commerce sales also reached one billion USD. According to a Statist a report, the Pakistani B2C e-commerce sales were accounted for USD 2 billion in 2019and USD 4 billion in 2020 10 11 . In the first half of 2020, the total amount of the e-commerce market reached USD1 billion 12 Among SCO member states B2C e-commerce is least developed in Kyrgyzstan, Uzbekistan, and Tajikistan. More than half of Kyrgyzstan and Uzbekistan population have an internet, but the online shoppers' percentage is below 10 percent. In 2019 the ecommerce indicators of Uzbekistan were increased by 6.7 times and online shopping amounted to USD 26 million, which is 11 percent of the total trade volume of Uzbekistan . 13 . As a country that was ranked 121stin the B2C e-commerce index, the e-commerce situation in Tajikistan remains unclear. As of 2013, there were no online stores in Tajikistan and according to IMF 14 However, the main online shopping concepts were established in the Western countries (Usunier J et. al, 2005), and the results may not be applicable to SCO countries **??**Ibrahim A. et. al, 2010; **??**brahimA. et. al, 2014). , Tajikistan Government is planning to improve a digital economy and up surge financial inclusion from 47 percent in 2017 to 65 percent in 2022. Despite these goals, the Digital 2021 Global overview report stated that only 430 thousand Tajikistani consumers made a purchase online and/or paid bills online as of January 2021, which is 13 percent of total internet users in Tajikistan.

As shown above, the B2C e-commerce situation varies among SCO member states. In summary, the overall e-commerce purchase statistics are low: as of January 2021, the average internet penetration in SCO member states was 56 percent, and only 19 percent of total internet users made online purchases and/ or paid bills online. Without doubt there are economic, infrastructural and politic factors on e-commerce adoption in SCO member states. However, this paper will precisely focus on demographic and cultural factors of e-commerce adoption in SCO region.

Factors affecting adoption of e-commerce and hypotheses development Demographic factors As ecommerce consumers consist of heterogonous groups with different needs and expectations, from the beginning of the 2000 s researchers started analyzing the socio-demographic factors impacting the online purchase of consumers (Farid et.al, 2016; Jung Wan, 2010) Based on researches it was concluded that age, education, gender, employment, and income have a significant influence on consumers' intention to purchase online (Tan M et. al, 2000; **??**uSi, 2003; **??**fizahH et. al, 2009; **??**enekeJ et. al, 2010;Leo Sin et. al, 2001) 11 https://primeminister.kz/ru/news/obem-rynka-elektronnoy-torgovliza-i-polugodie-2020-goda-sostavil-435-mlrd-tenge-2861921 12 https://kursiv.kz/news/rynki/2020-06/za-10-let-obem-rynka-elektron noy-torgovli-v-kazakhstane-vyros-v-20-raz 13 https://yuz.uz/ru/news/elektronnaya-torgovlya-v-mire-i-uzbekistane 14 Furthermore, among all generations' Baby boomers understand the usefulness of e-commerce, but has lowest opinion regards its trust worthiness.

The prevailing amounts of studies are conducted on differences and e-commerce usage of Generation X and Y **??**Lissitsa S et.al, 2016; **??**eisenwitz TH et.al, 2009; **??**okisuu E. et.al, 2007; **??**igilK, 2006). The first generation, whose internet consumption exceeded the television consumption, is Generation Y. However according to Barnikel, Vigil, and Bhatnagar (Barnikel, 2005;Vigil, 2006; **??**hatnagar A et.al, 2004) they use less online banking than Generation X.Lissitsa (Lissitsa S. et. al, 2016) stated that although Generation Y use internet more than Generation X, the percentage of online purchases is prevailing among Generation X. As for Generation Z, Flippin, Priporas, and Jorge **??**Flippin et.al Therefore, the following hypothesis is proposed:Hypothesis 1:

Online purchase is prevalent among young consumers of SCO member states.

4 Gender

Men and women differ not only in physical roles, but also in consumer behavior **??**Mitchell et.al, 2004) reported that products sold on e-platforms are more focused on men and therefore men purchase online more frequently than women. The reasons why women purchase less than men were proposed by several types of research and the majority of conclusions stated that women have lower trust and higher perceived risk towards online shopping **??**Garbarino E et.al, 2004; **??**ichang Cho et.al, 2009). However, a study by Wu revealed that even though men use online banking more frequently than women, apparently women have more trust to the online platforms security than men. **??**Wu W. et.al, 2016) Other reasons were found by Dittmar and Cho **??**Dittmar H et.al, 2004;Cho J, 2004), who concluded that online purchase is less attractive to women because of the absence of direct interaction with sellers and physical evaluation of products.

Despite to above conclusions, Andrej (Andrej S.et.al, 2018), Donna (Donna W., 2010), and Abu H. **??**Abu H, 2021) found that men and women participate at equal rates, and in some cases, women even outnumber in online purchases.

As it can be seen the impact of gender on online purchase has been analyzed and the results are not conclusive. Therefore, we propose that men purchase online more than women in SCO member states.

5 Hypothesis 2:

Online purchase is prevalent among male consumers of SCO member states.

6 Education

Online shopping differs from the traditional way of purchasing products and requires a set of technical skills, such as web browsing, credit or debit card usage, etc. Better educated consumers don't only use the information technology for diverse tasks, comprehensive search, but also use their cyber-fluency to find products that match their needs. **??** **??**001) studies concluded that education level influences the adoption, usage of e-commerce and the online shopping behavior. Moreover, Delia (Delia et.al, 2012) found that education has an impact on online purchases regularity and how consumers perceive the products.

Consumers with higher education consider price as an important factor for product perception, whereas users with low education consider service quality and subjective norms important in online shopping **??**Crespo et.al, 2010). Thus far, according to Mills **??**Mills et.al, 2003) less educated people even avoid the internet because they assume that digital content is concentrating on better-educated consumers. These conclusions were also supported by Goldfarb, Allred, Federici, and Chuang **??**Goldfarb et.al, 2008 Online purchase is prevalent among higher educated consumers of SCO member states.

7 Employment and income

According to an OECD report (OECD report, 2019), a higher level of education leads to better employment opportunities and therefore has a positive effect on higher earnings. In traditional studies, such as Shouvik (Shouvik S. et.al, 2018), high income is leading to higher consumption and affects the choice of store. Siyal, Hwang, Haque's studies **??**Hwang W et.al 2006; **??**iyal et.al, 2006; **??**aque et.al, 2011) found that income level is not only a significant factor for store shopping but also a positive approach for e-commerce adoption and purchase. Following these assumptions, some studies stated that online customers are not only employed, but also wealthier than traditional store consumers **??**Allred CR et.al, 2006; **??**erez Hernandez et.al, 2011). Depending on earnings, customers with higher income prefer to save time and shop online, whereas customers with lower income prefer to save money .

Based on the above assumptions, we propose the following:Hypothesis 4:

Online purchase is prevalent among employed consumers of SCO member states.

8 Hypothesis 5:

Online purchase is associated with higher income in SCO member states.

9 Cultural factors

One of the internationally recognized theories to understand cultural differences is Hofstede's cultural dimensions model, which was first published in the late 1970s, and updated in 1991 and 2010 (Hofstede 1980;2001;2010) **??**Doney et.al, 1998). As for PDI of SCO member states, Rinne and Yoon **??**Rinne et.al, 2013;Yoon, 2009) have concluded that China and India have a high power distance index, which affects the consumer behavior and leads to less trust in online shopping. Despite all the above, a study by Abu (Abu H., 2021) stated that power distance does not explain the difference in e-commerce usage between countries. Summarizing above, we propose the following hypothesis:

10 Hypothesis 6:

Online purchase is prevalent among SCO member states with a lower PDI.

11 Individualism versus collectivism

Individualism (IDV) versus collectivism (COL) dimension refers to ties between people in society. In an individualist society, the connection between people is low and there is no significant support between members. On contrary, in a collectivist society, the duties and prizes are shared in the group (Francesca P et.al, 2021). Moreover, Ligia (Ligia M, 2005) concluded that saving time is more important for a collectivist society, while individualists prefer better prices. According to Hofstede and Doney (Hofstede. G, 2010; Doney et.al, 1998), although in collectivist cultures have higher trust to e-platforms; individualist country citizens are more likely to try various e-platforms and to switch between them. Based on the above assumptions, we propose the following hypothesis:

12 Hypothesis 6:

Online purchase is prevalent among SCO member states with higher IDV.

13 Masculinity versus femininity

The masculinity (MAS) versus femininity (FEM) dimension characterizes whether gender has an influence on society's roles or not. According to Hofstede G. (Hofstede G., 2001) masculine cultures value success, aggressiveness, while feminine cultures focus on humility, sensitivity, and quality of life. Most Asian countries are characterized as feminine, as there is no strong differentiation between genders, whereas western countries are referred to as masculine, because of their competitive nature. As for online shopping and e-commerce adoption, Francesca and Srite **??**Srite et.al, 2006; **??**rancesca et.al, 2021) studies revealed that ecommerce is preferred by feminine society, and citizens of a masculine culture have higher user-friendliness of the platform. However, some studies stated that perceiving an online store is important for both societies (Schoorman et al., 2007;Schumann et al., 2010).

14 Hypothesis 8:

Online purchase is prevalent among SCO member states with lower MAS.

15 Uncertainty avoidance index

The uncertainty avoidance index (UAI) describes the degree to which individuals respond and tolerate uncertainties and ambiguities. Hofstede (Hofstede G., 2010) described uncertainties as "situations, which are unusual, unfamiliar, and unforeseen". Countries with high UAI prefer to constrain uncertainty by various rules and codes, and are often characterized as less prone to accept risks (Francesca P et.al, 2021). On contrary, people from lower UAI countries are willing to accept risks, and expected to faster adopt modern technologies and therefore, the ecommerce (Gong W., 2009; Hwang Y., 2012). The majority of studies concern Western countries as countries with lower UAI, and Asia as countries with higher UAI **??** Online purchase is prevalent among SCO member states with lower UAI.

16 Long-versus short-term orientation

Short-term oriented cultures focus on virtues related to the past and current situations, while longterm oriented focus on the upcoming situations **??**Hofstede G, 2011). Long versus short-term orientation not only affect the value perception but also influence the perception and trust. Harris **??**Harris S et.al, 1999) found that long-term-oriented cultures make long-lasting businesses only with trusted partners. In recent studies, researchers found that collectivism and long-term orientation are positively correlated with trust disposition and help to build trust in e-commerce. **??**Hallikainen et.al, 2018) Following these assumptions, we hereby propose the following: Hypothesis 10:

Online purchase is prevalent among long-termoriented SCO member states.

17 Indulgence versus restraint

Indulgence (IVR) versus restraint is the sixth and last cultural dimension by Hofstede G. This dimension reveals how society reacts to basic human needs and what social norms are followed. Societies that have weaker controls over feelings and needs are considered as indulgent countries, while countries with strict social norms considered as restraint (Hofstede, 2010). According to Hofstede G and Yavuz (Hofstede G, 2011; Yavuz, 2014) studies in indulgent society friends, leisure, equal gender roles, freedom of speech are considered as important. On contrary, restrained countries focus more on: savings, moral discipline, and order in the nation. As restraint countries mostly value duty over pleasure and interested in savings, we hereby propose the following hypothesis:

18 Hypothesis 11:

Online purchase is prevalent among restraint SCO member states.

19 III.

20 Research Methodology a) Data source and description

The following research model will be used to test above eleven hypotheses:

The World Bank Global FINDEX data is current most significant dataset on financial inclusion and used to analyze economic situations of individual countries and regional or financial blocs such as ASEAN, SAARC and WAEMU. (Jukan M et.al, 2016; Asli D. et.al, 2017; Dharmendra S. et.al, 2020; Abu H., 2021; Sionfou S., 2021). The B2C e-commerce adoption and usage among SCO member states are analyzed based on measurement "if the participant purchased something online in the past year" from latest FINDEX dataset. Moreover, the five independent demographic variables and account ownership data are also derived from FINDEX. In total this study analyzed 11227 face-to-face interviews with SCO citizens (China 3627, India 3000, Kazakhstan 1000, Pakistan 1600, and Russia 2000); whereas 26 respondents didn't mention their age, 32 education level and 161 respondents' online purchase data are missing. The details are stated in Table 3.

Six independent variables such as cultural country-level dimensions (power distance and uncertainty indexes, individualism, masculinity, orientation term and indulgence) are derived from Hofstede's site (www.hofstede-

insights.com) and measured in scale from 0 to 100. Moreover, we assume that GDP per capita and account ownership is correlated with internet penetration and online purchase, and thereby include them as control variables in the study.

The detailed definitions of variables are included below: The degree to which citizens accept country's distribution of power. Hofstede Individualism Ties between people in society, where as individuals take care of themselves or families. Hofstede

21 Masculinity

The degree to which gender has an influence on society's roles.

22 Hofstede Uncertainty avoidance

The degree to which individuals respond and tolerate uncertainties and ambiguities. Hofstede The degree to which society relays to the future to solve the problems. Hofstede

23 Indulgence

The degree to which society reacts to basic human needs and what social norms are followed. Hofstede

24 Control variables Account ownership

Have an account at a financial institution=1; Don't have an account at a financial institution=0 FINDEX GDP percapita Gross domestic production divided by population World bank b) Data limitations Cultural dimensions of Kyrgyzstan, Tajikistan and Uzbekistan are missing on Hofstede's site and according to the Digital 2021 Global Overview Report consumers of these three countries are comparatively not active in online purchases: total amount of users who made an online purchase and/or paid bills online in Kyrgyzstan is 0.16 million, Tajikistan is 0.43 million and Uzbekistan is 1.3 million, which is relatively low compared to other five SCO countries. Moreover, there is a certain gap of researches on cultural dimensions of these three countries and relying on studies by Seyil, Dadabaev and Kapcova (Seyil N, 2013; Dadabaev T, 2004; Kapcova A, 2018) we assume that Kyrgyzstan, Tajikistan and Uzbekistan are collectivist countries with different cultural dimensions. For instance, study by Seyil (Seyil N, 2013) stated that Kyrgyzstan is masculine country with low PDI and medium-term orientation. Dadabaev and Kapcova (Dadabaev T, 2004; Kapcova A, 2018) analyzed Uzbekistan and Tajikistan's cultural dimensions and stated that they both have high PDI. Moreover, researchers found that Uzbekistan is masculine long-term oriented country with high uncertainty avoidance index, whereas Tajikistan is short-term oriented feminine country with high indulgence index. As Hofstede study did not cover these three countries data and researches are not up to date, we will focus on five SCO member states, namely, China, India, Pakistan, Kazakhstan and Russia and analyze demographic and cultural dimensions data of these five countries.

25 c) Descriptive analysis

In this study we have conducted three descriptive analyses: two correlation analyses on GDP and demographic factors and one on cultural dimensions of SCO member states.

In order to test control variables, we conducted the analysis on GDP per capita with internet penetration rate, global cyber security index and total population of SCO member states. The economic classification of five member states is derived from FINDEX; the global cyber security index is from International Telecommunication Union; GDP per capita and total population data are from World Bank; and internet penetration rate from Digital 2021 Global Overview Report. The detailed data is included below: Five member states of SCO are countries with upper and lower-middle income, whereas the average GDP is USD 6555 million, internet penetration rate is 61%, and global cyber security index is 90. Based to correlation analysis results, stated on Table 5, we can see that our control variable, the GDP per capita, is positively correlated with an internet penetration rate at 0.90 and global cyber security index at 0.57. This proves our assumption that GDP has an impact on internet penetration and online purchase.

The second correlation analysis we conducted on demographic factors of SCO individuals. The analysis on FINDEX dataset from 14,227 face to face interviews with SCO citizens shows us that majority of respondents are employed female, who have secondary education, middle income and average age of 42 and correlation results are significant (Table 5). Based on above analysis we can state that our second control variable, the account at financial institution, is significantly correlated with online purchasing, showed on Table 6 (.274). Online purchase is also positively correlated with employment also secondary and tertiary education but negatively correlated with primary education that suggests higher the education higher the online purchase adoption, whereas age and gender is not. Also from the income side we see that online purchase is positively correlated with those who has more earnings such as Fourth 20% of income level holders also the Richest 20% of the population but negatively correlated with the less income owners such as poorest 20%, second 20%, middle 20% level income owners.

This proves the statement from OECD report (OECD report, 2019), which states that a higher level of education leads to better employment opportunities and therefore has a positive effect on higher earnings.

Lastly, we analyzed cultural dimension of SCO member states. Five member states of SCO, namely China, India, Kazakhstan, Kyrgyzstan and Pakistan are collectivist countries with high power distance index (total average score is 78.6). Citizens consider themselves as members of group and value personal interdependence. As region with strong hierarchy in power distribution it mostly has a strategy, aimed to bring benefits in the future (long-term orientation average is 70.8). Citizens of member states have high uncertainty avoidance (total average score is 64.6) and restraint score, which means that they value principles more than practice and follow strict social norms. Four member states beside Russia show strong characteristics of masculine countries and thereby gender plays an important role in society. The detailed average cultural dimensions are available in Table 6 and Table 8. Overall, the difference between SCO members shows unique distribution to the study to show how the individual in different countries adopt online purchasing and interact differently in e-commerce activities.

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27 Findings

In total eleven independent and two control variables were analyzed. Based on the dataset from FINDEX we have characterized not only the individual profiles of SCO customers but also figured out the average national culture dimensions of SCO member states. The detailed result of the correlation is included in Table 8:

28 Results and Discussion

To see the deep down relationship between domestic and cultural factors and the e-commerce behavior of customers in 5 SCO countries we conducted 3 types of regression including control variables; demographic variables; national culture variables separately and finally run all variables. Table 9 shows the control variables only of account ownership and GDP per capita while Table 11 shows the demographic variables only and Table 12 shows the results of all dimensions of national cultural factors. At last Table 12 combines not just individual but also country-level variables with the control variables. Overall, the modulated R2 increased evidently from 0.1572 to 0.3365 from Table 9 As for individual demographic factors, Table 9 and Table 12 shows that our results support Hypotheses 1, 3, 4, and 5 that online purchasing is more widely spread among younger buyers who have a higher education level, and are currently employed with a higher salary (Table 8). But Hypothesis 2 is not supported just because females are more active when it comes to online purchasing than men. The result is not so surprising because some other studies have already found these results before and there are both theoretical and methodological reasons to support these results. Men are much more active internet and technology users but in the last decade more and more women are introduced to the internet and became active users of online platforms especially when it comes to ecommerce platforms **??**Hernández B et.al, 2011). In some platforms, female customers' quantities have already exceeded the male customers' quantities **??**Stafford TF et.al, 2004). In national culture factors, Table 11 and Table 12 support Hypotheses 7, 9 also 11 that countries with higher individualism index, low uncertainty avoidance index, and low indulgence or more restraint have higher rates of e-commerce purchasing behavior in the population. On the other hand, Hypotheses 6, 8, and 10 did not match our initial expectations. Our results show that 3 of the 6 cultural dimensions including power distance, masculinity, and long term orientation do not show the relationship in e-commerce purchasing behavior between SCO countries, these variables are shows omitted results because they have collinearity with other variables, which means they cannot be considered as independent variables in this study. Previous studies showed that the power distance index does show the level of trust in society **??**Yoon C et.al, 2009), the final result on online purchasing behavior is not significant, maybe the interaction and relationship between the sellers and the buyers in e-commerce platforms virtual. As a result, power differences between these 2 parties are more invisible in the online relationships despite the power distance of the society. For masculinity, we assume that just because women are more active in e-commerce purchasing than men it is distinct that e-commerce is more female abundant **??**Stafford TF et.al, 2004), also 4 of 5 SCO countries in this study have high more than 50 as a masculinity index therefore the tests did not show any results for this

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Volume XXI Issue V Version I Year 2021 ( ) B matter. Also, all of 5 SCO countries in this study are relatively long term oriented, all have more than 50 as a long term oriented index in Hofstede study, therefore the results did not show any significance, and in future we would like to see more difference between those countries that are more short term oriented comparing to these 5 SCO countries. At last, control variables, GDP per capita, and account ownership in financial institutions are significantly and positively related to online shopping adoption.

30 Table13: Summary of results

31 Hypothesis

Remarks H1

Online purchase is prevalent among young consumers of SCO member states. Supported H2
Online purchase is prevalent among male consumers of SCO member states. Not supported H3 Online purchase is prevalent among higher educated consumers of SCO Member states. Supported H4 Online purchase is prevalent among employed consumers of SCO member states. Supported H5 Online purchase is associated with higher income in SCO member states. Supported H6
Online purchase is prevalent among SCO member states with a lower PDI. Not supported H7
Online purchase is prevalent among SCO member states with higher IDV. Supported H8
Online purchase is prevalent among SCO member states with lower MAS. Not supported H9
Online purchase is prevalent among SCO member states with lower UAI. Supported H10
Online purchase is prevalent among long-term-oriented SCO member states.

32 Not supported H11

Online purchase is prevalent among restraint SCO member states. Supported VI.

33 Conclusion

As one of the most important economic region in Eurasia, Shanghai Cooperation Organization (SCO) is devoted to developing e-commerce in the region. But SCO member states vary in terms of e-commerce experience due to dissimilar economic situations and cultural differences. Do individual and cultural factors affect e-commerce in these countries and who are the main customers of online purchasing platforms in SCO countries? In this study, we attempted to answer this question by examining the factors that are affecting B2C e-commerce adoption in the SCO region. The main objective of this study is to integrate the demographic characteristics with Hofstede's cultural dimensions to determine the factors of e-commerce adoption among consumers in SCO member states.

This study derived data from multiple different sources, for individual demographic characteristics including age, gender, education, employment, and income we used The World Bank Global FINDEX as a source and in total this study analyzed 11227 face-toface interviews with SCO populations from China, India, Kazakhstan, Pakistan and Russian Federation. For demographic characteristics including power distance, individualism, masculinity, uncertainty avoidance, longterm orientation, and indulgence we used data from Hofstede's site (www.hofstede-insights.com). Therefore, the results of this study show the importance of not just academic but also practical purposes.

First, the definition of e-commerce costumers in SCO is the complex combination in terms of demographics. E-commerce platforms are mostly used by those who are younger females with higher education and also in the workforce, who have more income than the others. This study shows that although SCO member states have signed the "Statement by the SCO Heads of State Council on Cooperation in the Digital Economy" assured to increase further adoption in the ecommerce field, the main part of the current ecommerce users are young individuals with higher education and incomes. E-commerce is widely used only among those who have the possibility and accessibility to the technology, and more importantly, who have paying abilities. Also, this study makes a remark that links the 2 different aspects and shows that not only individual characteristics are important to study e-commerce but also national culture factors. Therefore, we suggest the governments to design and make more policies to encourage online shoppers not just from individuals' perspectives but also from the national level by developing more favorable socio-values such as trust.

Overall, government officials in SCO countries need to extend the e-commerce customers varieties including especially those who have less income with low education in the population. There is a significant difference between e-commerce users and non-users that the officials should pay more attention to. Also on the country level, e-commerce development in SCO country is definitely connected to cultural values. National culture can't be changed in a short time; the government should seek to increase more favorable values in the whole society.

Although this study has certain contributions, there are some limitations. First, this study only collected data from 5 SCO countries; therefore there is a gap for future research including the other 3 SCO countries' data. Also, there is a room for more country-level controls. Moreover this research did not cover the physiological factors of the purchasing behaviors of the customers; therefore it can be extended to more behavioral studies.

Chen CW et.al, 2013;PonteviaAfa et.al, 2013), shopping experience (Thamizhvanan et.al, 2013; Spake DF et.al,2011), risk and benefit perceptions (Hong IB et.al, 2013; Liang Ar et.al, 2014;

Figure 1:

1

shows SCO member states
ranking in UNCTAD B2C e-commerce index from2016-
2020:
Year 2021
)
(B

Figure 2: Table 1 :

2

Member State	Total population (million)**	Total internet users (million)	Internet penetration (%)	Users, who make an online purchase and/or Online (million) pays bills	Online shoppers' percentage (%)
China*	1402	939.8	65.2%	459	48.8%
India	1380	624	45%	26	4.3%
Kazakhstan	18.75	15.47	81.9%	3.8	24.3%
Kyrgyzstan	6.59	3.32	50.4%	0.16	5%
Pakistan	221	61.34	27.5%	5	8%
Russia	144.1	124	85%	49	39.6%
Tajikistan	9.53	3.36	34.9%	0.43	12.8%
Uzbekistan	34.2	18.6	55.2%	1.3	7.1%

* China Mainland
World Bank
Chinese and Russian online shoppers lead
among total internet users in SCO member states.
According to the UNCTAD assessment of COVID-19
impact on online retail 2020 report, the total Chinese e-
commerce sales contributed 18 percent to Chinese
GDP in 2019 and Chinese B2C e-commerce sales have
been ranked first in 2020 9
9 https://unctad.org/news/global-e-commerce-jumps-267-trillion-covid-19-boosts-online-sales

Figure 3: Table 2 :

classified age groups into: Silent generation (1930-
1945), Baby boomers (1946-1964); Generation X (1965-
1977); Generation Y (1978-1994); Generation Z (1995-
2009) and Generation Alpha (2010onwards).
Parment A's two studies (Parment A, 2011,
2013) on

[Note: https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=26386 Therefore]

Figure 4:

Figure 5:

Figure 6:

Figure 7:

Power distance index
Power distance index (PDI) measures the
country's power distribution and how citizens accept
disposal of it.

Figure 8:

3

Variable	Definition	Source
	Dependent variable	
E-commerce adoption	Participant purchased online in the past year=1; no=0	FINDEX
	Independent variables (Demographic factors)	
Age	Age of participants	FINDEX
Gender	Male=1,female=0	FINDEX
Education	Primary=1,secondary=2,tertiary=3	FINDEX
Employment	Employed=1;unemployed=0	FINDEX
Income level	Poorest=1;Second=2;Middle=3;Fourth=4;Richest=5	FINDEX
	Independent variables (Cultural factors)	
Power distance		

Figure 9: Table 3 :

4

SCO member states	Economic classification (income)	GDP per-capita (USD mln)	Internet pene-tration rate (%)	Global cyber security index (outof100)	Total popu-lation (mil-lion)
China	upper-middle	10500	65.2	92.53	1402
India	lower-middle	1900	45	97.5	1380
Kazakhstan	upper-middle	9055	81.9	93.15	18.75
Pakistan	lower-middle	1193	27.5	64.88	221
Russia	upper-middle	10126	85	98.06	144.1
GDP percapita (USDmln)		1			
Internet penetration (%)		.903*	1		
Global cyber security index		.574	.730	1	
Total population (million)		-.118	-.285	.312	1

*.Correlation is significant at the 0.01 level (2-tailed).

Figure 10: Table 4 :

5

		1	2	3	4	5	6	7	8	9	1
1	Purchased online	1.0000									
2	Gender	-0.0138 1.0000									
3	Age	-0.2194 -0.0277 1.0000									
4	Primary	-0.2453 -0.0440 0.1607 1.0000									
5	Secondary	0.1147 0.0732 -0.1301 -0.7835 1.0000									
6	Tertiary	0.2117 -0.0416 -0.0578 -0.3798 -0.2703 1.0000									
7	Poorest20	-0.1247 -0.0181 0.0671 0.1622 -0.1047 -0.0965 1.0000									
8	Second20	-0.0795 -0.0254 0.0109 0.0977 -0.0562 -0.0685 -0.2404 1.0000									
9	Middle20	-0.0103 -0.0129 0.0041 0.0133 -0.0051 -0.0134 -0.2446 -0.2372 1.0000									
10	Fourth20	0.0570 0.0026 -0.0125 -0.0722 0.0624 0.0192 -0.2525 -0.2449 -0.2492 1.0000									
11	Richest20	0.1512 0.0519 -0.0675 -0.1930 0.0991 0.1535 -.02592 -0.2514 -0.2558 -0.2641 1.0000									
12	Employment	0.1761 0.2749 -0.1144 -0.0638 0.0144 0.0784 -0.0341 -0.0246 -0.0059 0.0221 0.0408 1.0000									
13	Hasanaccountatafi-nstitution	0.2744 0.0672 0.0406 -0.1904 0.1006 0.1466 -0.-981 -0.0472 0.0096 0.0451 0.0870 0.2030 1.									
14	GDPpercapita	0.3317 -0.0708 -0.3301 -0.1777 0.1044 0.1200 0.0382 0.0087 0.0009 -0.0058 -0.0407 0.1313									

Figure 11: Table 5 :

6

SCO member states	Power distance index	Individualism	Masculinity	Uncertainty avoidance	Long-term orientation	Indulgence
China	80	20	66	30	87	24
India	77	48	56	40	51	26
Kazakhstan	88	20	50	88	85	22
Pakistan	55	14	50	70	50	0
Russia	93	39	36	95	81	20
Total average	78.6	28.2	51.6	64.6	70.8	18.4

Figure 12: Table 6 :

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427 1 2

[1]http://eng.sectsco.org/news/20191023/590687.html 5 http://eng.sectsco.org/news/20210607/765371.html 6 http://eng.sectsco.org/news/20190926/583587.html 7 http://eng.sectsco.org/news/20210607/765371.html 8 http://eng.sectsco.org/news/20210510/750204.html

[2]

7

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Purchased online	1.000												
2	Age	-0.2194	1.000											
3	Gender	-0.0138	-0.0277	1.000										
4	Primary	-0.2453	0.1607	-0.0440	1.000									
5	Secondary	0.1147	-0.1301	0.0732	-0.7835	1.000								
6	Tertiary	0.2117	-0.0578	-0.0416	-0.3798	-0.2703	1.000							
7	Employment	0.1761	-0.1144	0.2749	-0.0638	0.0144	0.0784	1.000						
8	Poorest20	-0.1247	0.0671	-0.0181	0.1622	0.1047	-0.0965	-0.341	1.000					
9	Second20	-0.0795	0.0109	-0.0254	0.0977	-0.0562	-0.0685	-0.0246	-0.2404	1.000				
10	Middle20	-0.0103	0.0041	-0.0129	0.0133	-0.0051	-0.0134	-0.0059	-0.2446	-0.2372	1.000			
11	Fourth20	0.0570	-0.0125	0.0026	-0.0722	0.0624	0.0192	0.0221	-0.2525	-0.2449	-0.2492	1		
12	Richest20	0.1512	-0.0675	0.0519	-0.1930	0.0991	0.1535	0.0408	-0.2592	-0.2514	-0.2558	0		
13	Power distance	0.2087	0.2442	-0.0865	-0.3252	0.1919	0.2205	0.1112	-0.0105	0.0232	0.0179	-0		
14	Individualism	-0.1169	-0.0668	-0.0202	-0.0845	0.0438	0.0666	-0.0072	-0.0493	0.0238	0.0192	-0		
15	Masculinity	0.0660	0.0304	0.0756	0.4197	-0.2512	-0.2838	0.1096	0.0859	-0.0033	-0.0256	-0		
16	Uncertainty avoidance	-0.0288	-0.0068	-0.0741	-0.4587	0.2791	0.3030	-0.0978	-0.0746	-0.0037	0.0219	0.02		
17	Long-term orientation	0.3256	0.3184	-0.0620	-0.1612	0.0964	0.1063	0.1344	0.0437	0.0060	-0.0015	-0		
18	Indulgence	0.1274	0.1521	-0.0178	-0.0011	-0.0032	0.0038	0.1507	0.0259	0.0251	0.0049	-0		
19	Hasan account	0.2744	0.0406	0.0672	-0.1904	0.1006	0.1466	0.2030	-0.0981	-0.0472	0.0096	0.04		
20	GDP percapita	0.3317	0.3301	-0.0708	-0.1777	0.1044	0.1200	0.1313	0.0382	0.0087	0.0009	-0		

Figure 13: Table 7 :

8

	Dependent variable Purchased online in the past year		
	Independent variables		
Demographic characteristics of SCO		National cultural characteristics	
Age	Negative	Power distance	Positive
Gender	Negative	Individualism	Negative
Education	Primary-negative Secondary-positive Tertiary-positive	Masculinity	Positive
Employment	Positive	Uncertainty avoidance	Negative
Income	Poorest-negative Second-negative Middle-negative Richest-positive Fourth-positive	Long-term orientation	Positive
		Indulgence	Positive
	Control variables		
Account ownership percentage among five SCO member states			Positive
GDP percapita of five SCO member states (USD million)			Positive
To test the hypotheses, regression was conducted to estimate the connection between		independent variables and the e-commerce purchas behavior of respondents.	

Figure 14: Table 8 :

9

Source	SS	df	MS	Number of obsF(5,11060)		= =	11,066 1031.38
Model Residual	241.187672 1293.53355	2 11,063	120.593836 .116924301	Prob> FR=squared		= =	0.0000 0.1572
Total	1534.72122	11,065	.138700517	AdjR-squared Root MSE		= =	0.1570 .34194
Purchased online		Coef.	Std.Err.	t	P>|t|	[95%Conf.	Interval]
Has an account atfin.ins		.1753525	.0070598	24.84	0.000	.161514	.189191
GDP percapita		.0000257	7.86e-07	32.76	0.000	.0000242	.0000273
	_CONS	-.1243408	.0071869	-17.30	0.000	-.1384284	-.1102533

Figure 15: Table 9 :

Table10: Regression analysis of demographic variables

Source	SS	df	MS	Number of obs	F(5,11060)	= =	11,042
							451.53
Model Residual	475.060579 1054.9924	11 11,030	43.1873253 .096547543	Prob> FR=squared		= =	0.0000 0.3105
Total	1530.05298	11,041	.138579203	AdjR-squared Root MSE		= =	0.3098 .30927
Purchased online		Coef.	Std.Err.	t	P>|t|	[95%Conf.	Interval]
	Age	-.007239	.0001902	-38.05	0.000	-.0076119	-.0068661
	Gender	-.0170075	.0062368	-2.73	0.006	-.0292327	-.0047823
Secondary		.0139949	.0068112	2.05	0.040	.0006438	.0273461
	Tertiary	.1109274	.010173	10.90	0.000	.0909865	.1308682
Employment		.030998	.0064828	4.78	0.000	.0182905	.0437055
Second20		.0173501	.0094741	1.83	0.067	-.0012208	.0359211
Middle20		.0587375	.0094624	6.21	0.000	.0401895	.0772856
Fourth20		.0980209	.0094282	10.40	0.000	.0795399	.1165019
Richest20		.1467252	.009541	15.38	0.000	.1280231	.1654272
Has an account atfin.ins		.137837	.006641	20.76	0.000	.1248195	.1508545
GDP percapita		.0000351	7.93e-07	44.21	0.000	.0000335	.0000366
	_CONS	.0543776	.0117373	4.63	0.000	.0313703	.0773849

Table11: Regression analysis of cultural variables

Source	SS	df	MS	Number of obs	F(5,11060)	= =	11,066
							457.37
Model Residual	262.958855 1271.76236	5 11.060	52.591771 .114987555	Prob> FR=squared		= =	0.0000 0.1713
Total	1534.72122	11,065	.138700517	Adj R-squared Root MSE		= =	0.1710 .3391
Purchased online		Coef.	Std.Err.	t	P>|t|	[95%Conf.	Interval]
Power distance index		0	(omitted)				
Individualism		.0019896	.0005732	3.47	0.001	.0008661	.0031131
Masculinity		0	(omitted)				
Uncertainty avoidance		-.0017931	.0002086	-8.59	0.000	-.0022021	-.0013842
Long-term orientation		0	(omitted)				

Figure 16:

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