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Highlights

- Demographic and Cultural Factors
- Agricultural Development in Bangladesh
- Transnational Rural Labor Force
- Contribution of Banks on Agricultural

Discovering Thoughts, Inventing Future

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Transnational Rural Labor Force from Shandong Province Working in Japan and Korea

By Min Zheng, Joy Tio & Thelma D. Palaoag
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Abstract- To study the situation and influencing factors of Chinese rural labor force working abroad is not only conducive to relieving the employment pressure of China's labor market, but also conducive to adjusting the domestic economic structure and laying the foundation for China's "going out" strategy. The researchers focus on the survey data of the rural labor force of Shandong Labor Cooperation Company. Firstly, we make statistical analysis on the individual characteristics and the situation of migrant workers. Secondly, through the interactive analysis of the individual characteristics of rural labor force and the situation working abroad, it is found that there are differences in the length of time going abroad, the country of work, the place of work, the type of work, the income and the willingness to return to Japan and South Korea of Shandong Province with different gender, age, native place and education level. Thirdly, we construct OLS regression model to analyze the influencing factors of rural labor force's income. Finally, based on the research findings, we put forward some policy suggestions to promote the labor force to work abroad.

Keywords: *transnational flow of labor force, working in Japan and South Korea, working income, OLS regression model.*

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TRANSNATIONALRURALLABORFORCEFROMSHANDONGPROVINCEWORKINGINJAPANANDKOREA

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Transnational Rural Labor Force from Shandong Province Working in Japan and Korea

Min Zheng [α], Joy Tio [σ] & Thelma D. Palaoag [ρ]

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Keywords: transnational flow of labor force, working in Japan and South Korea, working income, OLS regression model.

I. Introduction

a) Background and Motivation

Economic globalization has made possible the realization of a global village. This global village is composed of countries with their own characteristics and advantages in information, industry, service, labor and other aspects. With the deepening of specialized division of labor, each country can make achievements in its own industries and deepen the contact and cooperation between countries. Capital, raw materials, science and technology, commodities and other factors of production flow around the world, so that each country can give full play to its own advantages and greatly improve the production efficiency and commodity quality. Among the factors of production, in addition to capital, raw materials, science and technology, commodities, there is also a very important factor of production --labor force. The effective allocation of labor force in the world is one of the important signs of economic globalization. The role of labor resources in economic development is more important in countries characterized by an aging society, a society where people over 65 account for 7% of the total population. Countries with sufficient labor can transfer surplus labor to countries with scarce labor, which will develop rapidly in a win-win manner.

According to the world migration report of 2018, the number of global migrants has reached 244 million, accounting for 3.3% of the global population, which is equivalent to one in every 30 people (World Migration Report, 2018). Developing countries are the main sources of international labor. Economic globalization, income gap, demographic changes, violent conflicts and other factors will urge people to seek work and life in areas with higher income and better environment. The flow of labor in the international market can not only optimize the allocation of global labor force, but also benefit the economic development of various countries (Moses, J.2006).

At present, the transnational flow of labor has increasingly become one of the focus of government agencies and researchers in China. China's labor resources are relatively rich. According to the data of the Ministry of Labor and Social Security, there are about 14 million new labor forces in China every year, and 150 million rich labor forces need to be transferred in rural areas. The urban flow of labor cannot completely solve the problem of labor supply and demand. The employment problem brought by the surplus labor force is not conducive to the economic development and social stability of our country. The expansion of international labor demand provides a new opportunity to effectively solve the problem of domestic surplus labor. However, China's labor force only accounts for 2% of the international labor market, which is far from the scale of China's labor force, which accounts for 20% of the world's labor force. The level of cross-border labor flow in China needs to be improved (Sun Z, 2014). Study on the situation of Chinese labor force working abroad and influencing factors is not only conducive to easing the employment pressure of China's labor market and increasing the income level of migrant workers, but also conducive to adjusting the domestic economic structure and laying the foundation for China's "going out" strategy.

The export of labor services in Shandong Province has gradually become an important part of the regional foreign economic cooperation, and has made positive contributions to the implementation of the "going out" strategy. In 2018, Shandong province

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dispatched 58000 labor personnel (including seafarers), among which 22000 were dispatched under foreign contracted projects, accounting for 37.4% of China's total, and 36000 under labor cooperation, accounting for 62.6%. The main markets of the province are Japan, Singapore, South Korea, Indonesia, Hong Kong, Panama, Algeria, Israel, Saudi Arabia and Kuwait. Among them, more than 60% of the total number of overseas students to Japan and South Korea have been sent from Shandong Province, which maintains Shandong Province the position of the largest overseas labor market in China. According to statistics, every 1% increase in the turnover (COR) of labor service cooperation in Shandong Province will increase the GDP of Shandong Province by 0.6765%. This is the situation that provides the rationale and relevance of this study. The findings of this study can be used as reference for the rural labor force who want to work abroad in Shandong Province and overseas employment service. The findings may also be used by the companies engaged in the practice of providing labor for overseas employment. They can use the findings as inputs in making policy decisions.

b) Statement of the Problem

The primary aim of this study was to describe the situation of the Shandong rural labor force groups working abroad. Specifically, it aimed to answer the following questions:

1. What are the individual characteristics of Shandong transnational rural labor force?
2. What is the situation of Shandong transnational rural labor force along
   a) Length of time of going abroad
   b) Country of employment
   c) Place of work
   d) Type of work
   e) Income
   f) Willingness to return to China
3. What is the relationship between individual characteristics and the situation of Shandong transnational rural labor force?
4. What factors influence the Shandong rural labor's income?

II. Literature Review

The academic circles have also carried on the thorough discussion to the labor force to work abroad and so on, its research content mainly concentrated in four aspects. The first is about the causes of the formation of migrant workers; the second is about the influencing factors; the third is about the significance and problems of migrant workers; the fourth is about the facts relating to choice of countries.

At present, the academic research on the influencing factors of cross-border labor mobility mainly discusses from the following aspects: first, personal characteristics; second, trade capital; third, management system; fourth, access restrictions.

a) Personal Characteristics

In terms of personal characteristics: the education level, marriage, age, intergenerational relationship, family structure, income status, household registration system, welfare risk, emotional relationship, etc. All of these have a significant impact on their decision to work abroad (David McKenzie and Hille Rapoport, 2007; Yang Xue and Ma Xiaoman, 2015; Zhao Feng et al., 2015; Wu Yanhua and Wang Yijie, 2017). Among them, in order to obtain higher labor remuneration, more promotion opportunities, more jobs and so on, become the main microeconomic reasons of labor force transnational flow (Tseng and yen Fen, 2011). In addition, labor price will also significantly affect the cross-border flow of labor (Zhang Zhixin et al., 2019). The low quality of migrant workers, conservative ideas and fierce market competition have become the main obstacles to China's labor export (Wang Weinan, 2014). AnJingjing (2018) found that the quality of migrant workers is low when studying the labor export of Henan Province, which makes Henan Province have no competitive advantage in labor export in the international market. Therefore, in terms of labor export, actively exploring emerging markets, avoiding homogeneous competition with other population exporting countries, and building labor service brand of migrant workers will become new growth points of labor export in China (Li Zhuowei and Zhang Ying, 2018).

b) Trade Capital

In terms of trade capital, export trade will significantly affect the cross-border flow of labor. There is a long-term and stable synergistic relationship between export trade and labor export (Zhan Yong and Li Li). The increase of China's export trade will lead to an increase in the number of migrant workers (Li, 2004). In addition, foreign capital agglomeration is also one of the main forces of regional labor mobility in China, and foreign capital agglomeration has a significant impact on China's labor mobility (ZangXin and Zhao Jiong, 2016).

c) Management System

At present, China's labor management system has to be improved. XiongZhanlin (2014) took the migrant workers in Heilongjiang Province as the research focus, analyzed the current situation of migrant workers in Russia, and found that the lack of safety guarantee and the irregular employment channels are the main obstacles to labor cooperation between China and Russia. China and Russia should give full play to the complementary advantages of labor resources of the two countries, increase China's labor output to Russia, and establish a sound employment mechanism, so as to better promote the economic development of China and Russia (DuanMeizhi, 2018). In addition to strengthen labor cooperation with Russia, we should also attach great importance to the labor cooperation mechanism with Southeast Asia and other neighboring countries. The cross-border flow of labor can bring unprecedented ideological confrontation and cultural integration to Yunnan border areas (ZiZhiyue and ShenPeng, 2018).

d) Access Restrictions

In terms of access restrictions: in addition to personal characteristics, trade capital and management system, the entry restrictions of importing countries will also have a certain impact on the labor force going abroad. Because of the cross-border flow of labor force, the interests of different groups will be uneven (Bonin H,2005). Therefore, some countries will impose restrictions on the degree of their labor market opening to the outside world. This kind of access restriction on cross-border labor mobility is the main force that affects the cross-border labor flow, increases the cost of cross-border labor mobility, and is not conducive to the overall Pareto improvement between exporting and importing countries (Moses J.W., 2006). Some labor importing countries have some contradictory psychology on the issue of transnational labor force. On the one hand, they hope to solve the problem of labor shortage through the introduction of foreign labor force, and on the other hand, they worry that the introduction of foreign labor force will damage the interests of local residents to a certain extent (Song Yanan, 2011).

III. Methodologies

Research designs are introduced in the first section. The second section explains data gathering tools, and the researcher presents the treatment of data in the last section.

a) Research Design

This study was a descriptive study of the Chinese labor force working overseas. It is descriptive since it described the demographic characteristics of the labor force as well as the factors that influence their working income. Quantitative and qualitative methods of analysis were used in the study.

The researcher used convenience sampling in selecting the respondents of this study. The sample was taken from Shandong Labor Cooperation Company. This company has been providing labor services to Japan and South Korea for more than five years. Hence, detailed and reliable data can be obtained.

The researcher distributed questionnaires to Shandong transnational rural labor force working in Japan and Korea through Shandong Labor Cooperation Company in the past three years. The researcher distributed 360 questionnaires and collected 322 valid questionnaires.

b) Data Gathering Tools

The researcher used a survey questionnaire as the primary data gathering tool. The questionnaire consisted of two major parts. The first part of the questionnaire dealt with the profile of the respondents – the individual characteristics of rural labor force, such as gender, age, birthplace, education level, family population, number of children and marital status. These variables were used to understand the relationship between the personal characteristics of migrant workers (gender, age, birthplace, education level, family population, number of children and marital status) and the situation of migrant workers(time of staying abroad, country of employment, place of work, type of work, income, willingness to return to China), so as to understand the situation of rural labor force in Japan and South Korea in detail, and find out the relationship between personal characteristics and migrant workers. Quantitative and qualitative data were collected.

The second part of the questionnaire investigates the situation of rural labor force going abroad, such as the time of going abroad, the country of work, the place of work, the type of work, the income and the willingness to return home.

c) Treatment of Data

The quantitative method was used to measure the degree of correlation between the individual characteristics and the working abroad situation. Specifically, it included the following:

Descriptive statistics: First of all, descriptive statistics on the individual characteristics of migrant workers in rural areas. Secondly, descriptive statistics are made on the situation of rural labor force working abroad. Finally, the paper makes an interactive analysis of the individual characteristics and the working abroad situation

Empirical analysis: The influencing factors are analyzed, and OLS regression model is used to analyze the influencing factors of rural labor income in Japan and South Korea.

Interview method: By interviewing the rural labor force of migrant workers, this paper tries to find the reasons behind the current state of migrant workers.

IV. Data Descriptions

The population of this study included the rural labor force of Shandong Province who were working in Japan and South Korea. They were sampled from Shandong Labor Cooperation Company. Shandong Labor Cooperation Company's main business is to provide labor services of Shandong to Japan and South Korea. It has been engaged in this service for more than five years, so detailed and reliable data can be obtained. 322 samples were expected collected, accounting for 60% of the total business volume.

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The analysis of the personal characteristics of rural labor force in Japan and South Korea is shown in Table 1.

Table 1: Descriptive statistical tables of personal characteristics

	Persons	Percentage		Persons	Percentage
Gender			Marital Status		
Female	147	45.65	Unmarried	133	41.3
Male	175	54.35	Married	189	58.7
Ages			Birthplace		
21-30	152	47.20	Qingdao	90	27.95
31-40	145	45.03	Weihai	57	17.70
41-50	25	7.76	Yantai	34	31.10
Education Background			Jinan	30	9.32
Primary school and below	1	0.31	Weifang	25	7.76
Junior middle school	71	22.05	Rizhao	22	6.83
Higher middle school	164	50.93	Jining	19	5.90
Junior College	63	19.57	Linyi	19	5.90
Bachelor's and above	23	7.14	Liaocheng	11	3.42
Number of kids			Heze	6	1.86
0	5	1.6	Binzhou	6	1.86
1	94	29.2	Zibo	3	0.93
2	75	23.3			
3	145	45.0			

The analysis on the situation of the labor force going to Japan and South Korea is showed in table 2.

Table 2: Descriptive statistical tables of transnational rural labor force working in Japan and Korea

Countries	Persons	Percentage	Time of staying abroad (year)	Persons	Percentage
Japan	290	90.06	1	116	54.66
Korea	32	9.94	2	113	35.09
Work place			3	93	28.88
Tokyo	61	18.94	Willingness to go abroad again		
Aichi	46	14.29	Go abroad again	201	62.42
Hyogo	44	13.66	Return home	121	37.58
Osaka	43	13.35	Types of work		
Hiroshima	38	11.80	Care for the aged	110	34.16
Hokkaido	33	10.25	Production workers	104	32.30
Nagoya	28	8.70	auto parts technician	48	14.91
Seoul	15	4.66	building worker	19	5.90
Jeju Island	13	4.04	server	16	4.97

Pusan	12	3.73	Agricultural workers	14	4.35
Ulsan	10	3.11	culturist	8	2.48
Inchon	7	2.17	chef	3	0.93
Income level (Ten thousand yuan)					
2-10	116	36.02			
11-20	113	35.09			
21-30	93	28.88			
>31	6	1.86			

V. Findings

This section explains the findings based on descriptive statistics, empirical analysis and interview. In the following parts, four research questions are discussed respectively.

Individual characteristics of Shandong transnational rural labor force

Most of the rural labor force going to Japan and South Korea in Shandong Province are male, middle-aged and married. Most of them are educated in middle school. Most of them are families of five and have three children. Among the 12 cities surveyed in Shandong Province, Qingdao, Yantai, Weihai and Jinan have the largest and most concentrated number of migrant workers abroad, while other cities are relatively scattered.

Situation of Shandong transnational rural labor force

The number of rural labors working in Japan is obviously more than that in South Korea. The number of rural labors working in Japan is mainly concentrated in Tokyo, Aichi, Hyogo and Osaka. They work abroad for a short time, mainly for one year, mostly engaged in nursing, manufacturing and other related work, and their annual income is between 100,000 and 150,000. In addition, rural workers in Japan and South Korea hope to work abroad for a long time, and their willingness to return home is weak.

Relationship between individual characteristics and the situation of Shandong transnational rural labor force

The time for women to work abroad is less than that for men. Women prefer to work in Tokyo, Aichi, Osaka, Hokkaido and Hiroshima. Men prefer to work in Tokyo and Hyogo. No matter male or female, the number of workers engaged in manufacturing, nursing and auto parts is more than others. Compared with men, the proportion of women who are willing to return home is larger.

The choice of countries is slightly different among different age groups. Most of the 21-30-year-old rural workers prefer to work in Aichi, Japan; most of the 31-40-year-old rural workers went to Tokyo and Aichi, Japan. There are some differences in their choice of jobs. Among them, 21-30-year-old rural labor force are mainly nursing workers, manufacturing workers and auto parts workers, 31-40-year-old rural labor force are mainly engaged in manufacturing and nursing and 41-50-year-old rural labor force are mainly nursing workers. With the increase of age, the proportion of people who intend to return to China gradually decreases, while the proportion of people who do not intend to return to China gradually increases.

The rural labor force from Yantai and Weihai who went to Japan and South Korea worked abroad longer time than those from other cities. The rural labor force with different birthplace also has different choice for the country of work. The rural labor force with native place of Weifang, Rizhao, Liaocheng, Jining, Jinan, Heze, Binzhou tends to work in Japan, while the rural labor force with native place of Zibo, Yantai, Weihai, Qingdao tends to work in South Korea. The rural labors from Liaocheng have the strongest willingness to return home,next are labors from Yantai, Weifang, Jining and Qingdao. Heze and Zibo have the weakest willingness to return home.

The higher the level of education, the weaker their willingness to return China in the future. In the rural labor force with junior high school, senior high school, junior college and undergraduate education, the proportion of low-income people in the total number of people with corresponding education level decreased in turn.

Analysis on influencing factors of rural labor force's income in Japan and South Korea.

a) *Variable selection*

1. Explained variable

The explained variable is their working income, expressed in annual income.

2. Explanatory variable

The explanatory variables of this paper include the personal characteristics of rural labor in Japan and South Korea and the situation of working abroad. The personal characteristics of rural labor force in Japan and South Korea are composed of six variables: gender, age, native place, education level, marital status (married means married, unmarried includes unmarried, divorced and widowed)and number of children. The situation of rural labor going abroad to Japan and South

Korea includes four variables: time of going abroad, type of work, place of work and willingness to return home. The specific variable description are shown in table 3.

Table 3: Variable meaning and sample specification

Variable	Variable meaning	Mean	Std
Gender	Male=1, Female=2	1.46	0.24
Age	21-30years=1, 31-40years=2, 41-50years=3, others=4	1.62	0.44
Birthplace	Zibo=1, Yantai=2, Weihai=3, Weifang=4, Rizhao=5, Linyi =6, Qingdao =7, Liaocheng=8, Jining=9, Jinan=10, Heze=11, Binzhou=12	7.29	1.29
Education	primary school=1, junior high school=2, senior high school=3, junior college=4, bachelor=5	3.11	0.70
Marriage	Marriage=1, unmarried=2, divorced=3, widowed=4	1.46	0.33
Kids number	continuous variable, unite(people)	2.15	0.82
Time of abroad	continuous variable, unite(year)	1.91	0.64
Wiliness to return	No willingness=1, willingness=2	1.38	0.23
Type of Work	Construction worker=1,chef=2,fish farmer=3, auto-part worker=4, manufacturing workers=5, waiter=6, Agricultural workers=7,carer for the aged=8	5.70	4.10
Working country	Korea=1, Japan=2	1.91	0.10
Workplace	Seoul=1, Ulsan=2, Pusan=3, Jeju Island=4, Inchon=5, Tokyo=6, Hiroshima=7, Osaka=8, Hyogo=9, Aichi=10, Hokkaido=11, Nagoya=12	6.67	3.10
Income	continuous variable, unite (million yuan/year)	10.38	3.77

b) Model setting

In order to verify the influencing factors of rural labor income in Japan and South Korea, this part establishes the following econometric model

$$Y = \alpha_0 + \alpha_1 X + \delta$$

Among them, Y is the income of rural labor force going to Japan and South Korea, and X is the explanatory variable, including gender, age, native place, marital status, education level, total number of children, time of going abroad, type of work, place of work and willingness to return home. δ is a random interference term.

c) Regression analysis

This part uses OLS regression model to explore the influencing factors of the income of rural labor force in Japan and South Korea. The regression results are shown in Table 4. From the model, it can be seen that in all the explanatory variables, except gender, age, birthplace, marital status and willingness to return home have no effect on the income of rural labor going to Japan and South Korea, all the other variables have significant effect on the income of rural labor going to Japan and South Korea.

In terms of years of education, it can be seen from table 4 that education level has a positive effect on income ($r = 0.12$, $P = 0.03 < 0.05$), the annual income of rural labor force in Japan and South Korea will increase by 12,000 yuan every additional year. This is basically consistent with the conclusion of the cross analysis of education level and income of rural labor force in Japan and South Korea before. The reason may be that with the increase of education level, the more competitive the rural labor force going to Japan and South Korea has in the labor market, and they are more likely to find jobs with high salary and good working environment.

In terms of the total number of children, it can be seen that the total number of children has a positive effect on the income ($r=0.09$, $p=0.04<0.05$; $r=0.14$, $p=0.03<0.05$). With the increase of the total number of children, their annual income increased by 14,000 yuan. With the increase of the total number of families or children, the higher the income of rural labor going to Japan and South Korea. The reason may be that with the increase of the number of families or children, the pressure of rural labor going to Japan and South Korea is increasing. The purpose of their going abroad to work is to earn more money and then take it home or improve their life. The increase in the number of families or children will encourage them to work hard and get more labor remuneration.

In terms of time to go abroad, it can be seen that the influence of time abroad on income is positively related (r=0.31, p=0.02 < 0.05), the annual income of rural labor force going abroad to Japan and South Korea will increase by 3100 yuan every additional year. The reason may be that with the increase of working time abroad, rural workers in Japan and South Korea adapt to foreign life better. The higher acceptance of cultural difference and the more social capital they accumulate abroad make them have more opportunities to get jobs with higher labor remuneration.

In terms of types of work, it can be seen that the impact of construction workers, chef, fish farmers and agricultural workers on income presents a positive relationship (r=0.14, p=0.31>0.05; r=0.20, p=0.09> 0.05; r=0.05, p=0.10>0.05; r=0.04, p=0.16>0.05), but they were not significant. On the other hand, the impact of manufacturing workers, carer for the aged and auto parts workers on income showed a positive relationship. (r=0.28 p=0.03<0.05; r=0.12, p=0.04<0.05; r=0.18, p=0.04<0.05 The income of manufacturing workers, carer for the aged and auto parts workers is higher, and the annual income gap is 1200-2800 yuan, which has passed the significance test. The reason may be that manufacturing workers, care for the aged and auto parts workers require higher professional skills and less job substitutability, so they will get higher remuneration. The rest of the types of work did not pass the significance test, which may be because the other types of workers are engaged in similar work and do not need professional skills, so the income difference is not significant.

In terms of workplace, it can be seen from table 4 that the impact of workplace in Tokyo on income presents a positive relationship (r=1.88, p=0.03<0.05), that of workplace in Seoul presents a positive relationship (r =1.44, p=0.04< 0.05), and that of workplace in Aichi presents a positive relationship (r=0.43, p=0.02 < 0.05), the annual income of rural labor force from Tokyo and Seoul is more than 10000 yuan higher than that from Aichi Japan. The reason may be that Tokyo and Seoul are the capitals of Japan and South Korea, with better economic development, higher average consumption expenditure and higher corresponding labor remuneration.

Table 4: Regression analysis of the factors influencing the income of migrant workers

Variables	Model	
	Income	
Gender	-0.07	(0.19)
Age	0.55	(0.09)
	Birthplace	
Linyi	0.09**	(0.04)
Zibo	0.10	(0.13)
Yantai	0.03	(0.08)
Weihai	0.05	(0.06)
Taian	0.06	(0.18)
Rizhao	-0.12	(0.09)
Qingdao	-0.01	(0.11)
Liaocheng	0.05	(0.12)
Jining	0.13	(0.19)
Jinan	0.07	(0.11)
Heze	-0.10	(0.20)
Binzhou	0.01	(0.14)
Education	0.12**	(0.03)
Marriage	0.26	(0.13)
Kids number	0.14**	(0.03)
Time of abroad	0.31**	(0.02)
Willingness to return	0.33	(0.06)
	Type of work	
construction worker	0.14	(0.31)
chef	0.20	(0.09)
fish farmer	0.05	(0.10)
auto-parts worker	0.18**	(0.04)
manufacturing worker	0.28**	(0.03)
waiter	0.12**	(0.04)
agricultural workers	0.04	(0.16)
carer for the aged	0.20**	(0.01)
	Workplace	
Seoul	1.44**	(0.04)

Ulsan	0.52	(0.11)
Pusan	0.36	(0.13)
Jeju Island	0.58	(0.23)
Inchon	0.41	(0.22)
Tokyo	1.88**	(0.03)
Hiroshima	0.23	(0.10)
Osaka	0.69	(0.11)
Hyogo	0.49	(0.28)
Aichi	0.47	(0.22)
Hokkaido	0.51	(0.16)
Nagoya	0.60	(0.19)
Constant	4.10**	(0.03)
R2	0.21	
Observation	322	

*Note: *, * *, *** respectively indicate that they have passed the statistical tests with significance levels of 10%, 5% and 1%.*

VI. Conclusions & Recommendations

This part presents the conclusions derived from the findings and the recommendations forwarded by the researcher.

a) *Conclusions*

Based on the relevant data of rural labor force in Shandong Province, the researcher first makes descriptive statistics on the individual characteristics and the situation of rural labor force going abroad to understand the sample distribution. Secondly, through the interactive analysis of the individual characteristics of rural labor force and the situation of migrant workers abroad, the researcher understands the correlation between the personal characteristics of migrant workers and the situation of migrant workers. Finally, the OLS regression model is used to analyze the influencing factors of income of rural labor force. In the light on the findings of the study, the following are the conclusions:

1. There are specific characteristics that are common to the Shandong transnational rural labor force. According to the research, most of the rural labor force going to Japan and South Korea in Shandong Province are male, middle-aged and married. Most of them are educated in middle school. Most of them are families of five and have three children. Among the 12 cities surveyed in Shandong Province, Qingdao, Yantai, Weihai and Jinan have the largest and most concentrated number of migrant workers abroad, while other cities are relatively scattered.
2. There is a distinct profile that is common to the labor force that works in Japan and Korea in terms of time of going abroad, country of employment, place of work, type of work, income and willingness to return to China. The number of rural labors working in Japan is obviously more than that in South Korea. The number of rural labors working in Japan is mainly concentrated in Tokyo, Aichi, Hyogo and Osaka. They work abroad for a short time, mainly for one year, mostly engaged in nursing and manufacturing and other related work, and their annual income is between 100,000 and 150,000. In addition, rural workers in Japan and South Korea all hope to live and work abroad for a long time, and their willingness to return home is weak.
3. In the rural labor force going to Japan and South Korea, gender is related to the time of going abroad, workplace, type of work, income and willingness to return. Age is related to the country, workplace, type of work and willingness to return home. Birthplace is related to time of going abroad, working country and the willingness to return home. The education level is only related to the income and the willingness to return home.
4. The main factors affecting the income of rural labor force in Japan and South Korea are the number of years of education, the total number of children, the time of going abroad, the type of work and the place of work. Manufacturing workers, caregivers and auto parts workers and workers in Tokyo, Japan and Seoul, South Korea have higher incomes; with the increase of years of education, the total number of children and the time of going abroad, the income of rural labor going to Japan and South Korea is higher.

b) *Recommendations*

The cross-border flow of labor is conducive to the relief of employment pressure in China. In order to better promote income level, the following are recommended.

1. The surplus rural labor force is encouraged to work abroad. Through the analysis of Shandong Province rural labor force to Japan and South Korea, we can see that their income level is higher than that of the domestic labor market, and their willingness to return home is weak. Therefore, compared with domestic workers, they are more willing to work abroad, and they are more satisfied with the overall situation abroad. Therefore, the related branches in Shandong Province can publicize the benefits of working abroad, let the labor force of the right age

or other surplus labor force know the working status and satisfaction of working in Japan and South Korea, eliminate their worries about working abroad, and stimulate their desire to work in Japan, South Korea or other countries. This can not only improve the income level, their living conditions, it will also help to ease the employment pressure in Shandong Province.

2. Enhance the education level of migrant workers abroad. Through the analysis of the personal characteristics and the situation of going abroad of the rural labor force in Shandong Province, we can know that the education level of the rural labor force in Shandong Province is low, which makes them not have much competitive advantage in the labor market at home and abroad. From the analysis of the influencing factors of rural labor income in Japan and South Korea, we can see that the higher the level of education, the higher the income. In order to better promote the rural labor force to work abroad, we can start from the following aspects: on the one hand, the Shandong government can encourage migrant workers to participate in adult college entrance examination, increase their education level and improve their academic qualifications. On the other hand, relevant institutions can carry out vocational and technical education for migrant workers. Increasing the practicality and professionalism of education is an effective strategy to meet the needs of labor force.
3. Strengthen the skill training of migrant workers abroad. It can be seen from the survey that the rural labor force in Shandong Province who go to Japan and South Korea are mostly engaged in some jobs with low professional requirements, which makes them excluded from the high-income groups. From the analysis of the influencing factors of rural labor income in Japan and South Korea, it can be seen that workers with higher professional skills, such as manufacturing workers, nursing workers and auto parts workers, whose job substitution is small can get higher labor remuneration. Therefore, we need to improve the professional and technical level of migrant workers abroad, so as to increase their income level. First, determine the focus of professional skills training. Because the younger labor force has a strong learning ability and will work for a long time in the future, professional skills training for them can not only save the training cost, but also obtain better training effect. Therefore, in the process of professional skills training for labor force, we should take the younger labor force as the key training object. Secondly, increase the pertinence of professional skills training. Training can be carried out according to the demand of labor should be focused on. Through the discussion and in-depth interview, we learned that language is one of the main obstacles for the labor force to work abroad. Strengthening the language training of the labor force is conducive to their faster integration into the foreign working environment. At present, the cost of foreign language learning in the market is high, so it is difficult for ordinary labor force to spend too much money on foreign language learning. Their education level is low, and the difficulty of self-learning foreign language is also great. Therefore, the relevant branches of Shandong Province should establish language training for migrant workers abroad, so that they can afford the cost of learning foreign languages.
4. Form a group of migrant workers with geographical ties. From the analysis of the interaction between the Birthplace of rural labor force in Japan and South Korea and the country where they work, we can see that the rural labor force whose native place is Weifang, Rizhao, Liaocheng, Jining, Jinan,Heze, Binzhou tend to work in Japan, while the rural labor force whose native place is Zibo, Yantai, Weihai and Qingdao tend to work in South Korea. From the analysis of the influencing factors of rural labor income in Japan and South Korea, it can be concluded that the rural labor force in different cities have different choices for the migrant countries. The reason may be that the number of migrant workers in China is still small. Most of the migrant workers choose to work abroad because they are introduced by their relatives and friends. Therefore, migrant workers in different cities have different choices about the country of work. In order to make it more convenient for the migrant workers to understand the situation of the migrant country and ensure the legitimate rights and interests of the migrant workers, the relevant branches in Shandong Province should set up relevant institutions to be responsible for the problem of labor force going abroad to work in the region, and provide help for the workers who want to go abroad to work. In addition, WeChat subscription, WeChat, QQ group can also be used to push information and reduce the cost of information transmission. Take the city as the center, form a group of migrant workers with geographical ties, and enhance their sense of belonging.
5. Diversified overseas employment channels led by the government should be built. In the past, the channels for Chinese labors to work abroad were relatively single, and they were generally monopolized by the government, which could not meet the needs of Chinese labors to work abroad, leading to the emergence of some illegal immigration. Later, the emergence of labor service companies abroad provided convenience for our labor force to work abroad. However, in the process of talking with migrant workers, we find that some

labor export companies have higher intermediary costs that most of the labor cann't afford. Therefore, in the labor export market, we should take the government as the leading role, take each labor export company as the auxiliary, the government is responsible for supervising and auditing the legitimacy of the labor export company, and give some preferential policies to the labor export company, so as to reduce the cost of labor when they go abroad to work, and protect the legitimate rights and interests of the labor who go abroad to work. In addition, relevant government agencies should provide convenience for individual workers to directly go abroad for employment, so as to provide them with better employment opportunities. It is helpful for our country's labor force to work abroad by building a diversified way of labor force working abroad.

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A Practical Tariff Methodology for Port Authorities

By Sandro José Monteiro & Fabiane Santos de Mello
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Keywords: *port tariff, pricing, port, port authorities, economic regulation.*

GJMBR-B Classification: *JEL Code: B29*

APRACTICALTARIFFMETHODOLOGYFORPORTAUTHORITIES

Strictly as per the compliance and regulations of:

A Practical Tariff Methodology for Port Authorities

Sandro José Monteiro [α] & Fabiane Santos de Mello [σ]

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I. Introduction

In Brazil, the former "Port Modernization Law", Law No. 8,630, of February 25, 1993, provided that private terminals could predominantly handle their own cargo, which was an inhibiting factor that significantly reduced the possibility of competition between public ports and private terminals. The current regulatory framework, Law No. 12,815, of June 5, 2013 ("New Law of Ports"), has expanded the possibilities of creating port infrastructure, freeing up the possibility of handling third-party cargo in Private Terminals (TUPs). Deregulation had the effect of a vertiginous growth in the number of TUPs, now in open competition with leases in public ports areas. Thereby, managers of public ports were forced to face a new market, leaving, to the past, the monopolistic position, in search of greater competitiveness and new revenues. The motto became efficiency, with the port tariff being a key factor for such success.

Port structures directly influence national navigation, impacting the product price for end customers. Therefore, when we talk about modernization and competition, we are also talking about adequate and reasonable port tariffs, which encourage the greatest possible movement within public ports, sustaining quality infrastructure, as the order of the day is to reduce the "Brazil Cost".

Given this background, the National Agency of Waterborne Transportation - ANTAQ, in 2019, issued Normative Resolution No. 32 (RN 32/2019) (ANTAQ, 2019), esforces a standardized tariff structure to the port authorities and a list of procedures for projects of review and adjustment of prices. Those rules created several new concepts, including: Tariff Modality, Required Revenue, Market Segmentation, Reference Period and Tariff Group.

Some highlights include article 15, which defines two procedural typologies: the tariff review, which may be extraordinary or ordinary, and the tariff readjustment. Article 16 informs elements of analysis, establishing a tariff review model based on the balance of projected revenues with the projected average costs of each service for the subsequent period. However, there is a lack of information: a mathematical-financial model and the nuances of this type of analysis.

The purpose of this work was the development of an application model with a hypothetical and general case study, using ANTAQ´s rules contained in RN 32/2019, establishing the difference, in Brazil, between adjustment of tariffs and review of tariff, as well as analytical elements of economic-financial balance. The tariff modeling also seeks to elucidate a list of general principles for all those involved in the transportation services inside public ports, especially those provided by port authorities.

II. Development

a) Price regulation in Brazilian public ports

"Price regulation" is understood, in Brazil, to be a regular government activity whose tool is a set of methodologies that determines a maximum or minimum price used by public utilities, carriers and service providers to charge its consumers for each product or service provided. Since such economic agents most often hold monopoly power, where the efficient price does not arise from a normal interaction between demand and supply, thus it is up to an independent agency to arbitrate the price. Therefore, it is a good method of replacing the competitive market, simulating its results.

Price formation is a central issue to regulation, as it concentrates questions about the operational cost distribution to consumers, including subsidies. Reconciling multiplayers interests are among the regulator's attributions.

Such rules are debated by the scholar Joana Paula Batista (BATISTA, 2005), in her book "Public Services Remuneration", discussing the applicable

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principles to the remuneration of public services. Deriving from the study, Table 1 is proposed, with some additions and adaptations of this part. The additions descend directly from RN 32/2019.

Table 1: Eleven principles of the Brazilian port tariff

Principle	Features
1. Proportional	To the user's enjoyment.
2. Specific and divisible	There is certain imputability to a particular user, separately identifiable, according to measurement.
3. Real	There is a correspondence between what is charged and what is consumed (taxable event), effectively made available.
4. Exact	It is known in advance by the user, before delivery starts.
5. Affordable	Reflects the lowest possible cost.
6. Forthcoming	It has only prospective effects.
7. Enough	To meet the needs of the agents involved.
8. General	Wide universality ensuring the greatest number of users
9. Neutral	It does not distort market relations.
10. Reasonable	It adequately remunerates the supplier, promoting the expansion of the service.
11. Fair	For every type of user.

In Brazil, "tariff" is a type of price (and its ways of charging) regulated by an Agency or Federal Department. Also called "public price", as it is related to some state attribution. Usually used to deal with monopolies in the provision of essential infrastructure (transport, energy, telephony and sanitation). The regulated company's profit will not be so great that the consumer feels harmed, but it will not be so small that the entrepreneur feels uncomfortable (or discouraged) in investing high resources. It must be set at an adequate level to facilitate mortgages (therefore, it must be higher than market interest rates, or on the contrary, the loan must be subsidized by state banks) aimed at improving services or expanding infrastructure.

The port tariff, a concept created by Decree No. 24.508, of 1934, and by Law No. 3.421, of 1958, is the price offered by Brazilian port authorities for supplies within the respective public port under their commercial management. It consists of a price list, called, in industry jargon, "tariff table", through a metric (or form of tax incidence), called "tariff modality". The tariff table must be "public", with ample and prior knowledge of users (within a consolidated document). The value of the transaction is voluntarily assumed or provided by those who intend to use an available service, and it is not, therefore, a mandatory obligation arising from the legislation. It is carried out upon request, usually verbal, that is, on demand, without any kind of individual contract between the parties.

In terms of market structure, the port authority, manager of the public port (sometimes called "organized port") can be seen as a monopolist firm that discriminates N-Products, in addition to the following microeconomic characteristics: intensive in labor, sunk costs, economies of scale, barriers to entry, high fixed costs, low incentive to innovation, government participation in investments, extraordinary guarantees and a large presence of public goods. An alternative framework is also possible, such as a non-cooperative oligopoly, given that there are several ports in Brazil. However, we see some level of hegemony in certain types of cargo at certain ports, so that it is possible to model it as a monopoly, with a good dose of assertiveness, even if they face competition.

This market power has been decreasing since the 2010s, mainly due to the advent of new private terminals (there are more than 200 nowadays), but it is still predominant because relationships are often very complex inside the transportation area and "essential facilities". The simple entry of new providers is often not enough to reduce the market power of pre-existing agents. There are intangible aspects related to any business, such as loyalty, long-term relationships, trust between people and perception of quality. Another point is the idle capacity, where the local land transport infrastructure and the retroport areas also influence the choice of the embarkation or disembarkation port, as well as the offer of maritime routes by ship-owners.

In price regulation, there are several methods, but for the purposes of our work, we are going to work with two: Regulation by rate of return (cost pricing) and Regulation by ceiling price (price cap). That's what we'll see now.

b) Generic tariff review

In the Brazilian public ports, we define the Tariff Review as a procedure to evaluate and examine all costs and revenues of a regulated company, renegotiating a new level of profitability for future investments, without any prior indexes, in order to ensure balance of the original economic-financial framework (re-equilibrium). It can be regular (in cycles) or not (it is suggested that the first cycle is three years, and may be extended to four years in the second and five years in the third), depending on the contract (public-private partnership) signed with the port authority. In half of the cases, there is no contract, because companies belong to the federal government, which makes price regulation challenging, due to the lack of contractual obligations.

There are many review hypotheses; the most common is when a significant amount of new legal taxes or new investments (not originally foreseen in the "contract") is obligated by the Agency or Federal Government, generally for improving quality or expansion infrastructure. Existing prices will not be sufficient to cover all the news costs.

Until the mid-1980s, the most used method for tariff review in countries was price regulation according to the "cost of services", also called regulation by the internal "rate of return". The method was generalized from the North American experience started at the last century, with the regulation of monopolies. In other countries, there was no tradition of such regulation, as the service providers were, most of the time, government-owned (state-owned enterprise) - monopoly profit being appropriated by the State, as in Brazil.

From the perspective of US regulation, successful pricing is one that achieves the following main objectives:

- Avoids pricing below cost (including a "reasonable" return);
- avoids arbitrary profits;
- Facilitates agility in the process of defining and revising tariffs;
- Prevents misallocation of resources and inefficient production; and
- Establishes non-discriminatory or inappropriate prices among different types of consumers.

It seems to us that this perspective is appropriate to the Brazilian port sector, and is reflected in normative. Prices must remunerate total costs and contain a margin that provides a positive rate of return for investors.

Thus, the regulation by "rate of return" implies that, for example, a regular company providing a maritime access is authorized to set a toll fee in order to cover all the operating costs (which includes payment of employees, car fuel, machinery, expenses with water and electricity, equipment maintenance etc.), and the necessary loans for expanding the infrastructure, in addition to sustaining a reasonable profit based on investments and expenses.

In this example, the Regulator decides which expenses and investments are acceptable to compose the calculation, which is not a simple task, mainly because of information asymmetry, in which the firm always has more data than the regulator. At each period, based on accounting data, the depreciation policy and inflation in the period, tariff levels are set under certain market hypotheses. There may be negotiations on various aspects, in particular on what to do with the frustrated profit in the previous period compared to a forecast (for example, results can be compensated and included in the costs).

The regulated company's profit will not be so great that the consumer feels aggrieved, but it will not be so small that the entrepreneur feels uncomfortable (or without incentive) to invest high resources. The rate of return must be at an appropriate level to facilitate mortgages (therefore, it must be higher than market interest rate, or otherwise the loan must be subsidized by state-owned banks) aimed at improving services or expanding infrastructure.

To avoid excess profits, the Regulator, in general, determines the rate of return through a negotiation process with the service provider or representatives of the sector, listening to the group of affected users. In fact, the authority needs to pay attention to the market, i.e., to the rate that the business community is expecting (expectations is a central theme within the economy). A lower rate than expected generates less attractiveness for investments, reduces the value of the concession, auctions with few offers and low competition in the market dispute. In a kind of benchmarking regulation, the Regulator, when evaluating the review proposal, will be able to compare the project prices with similar ports, or even with the lowest known price, supposedly considered the most efficient.

The tariff review procedure is much more complex when there are several services provided by the firm, which is one of the objectives of this work, that is, a proposal for that. In this case, the definition of the different tariff levels requires apportionment of common costs (indirect and overhead) in order to obtain consistent relative prices that reflect efficient allocation.

In these more complex cases, there are three more general methods of apportionment formulas: i) according to the specific costs of which goods or services (as authorized by Law No. 8987, of 1995); ii) according to the income obtained by which goods or services; iii) according to the quantities of goods or services sold in the last period. All three are arbitrary to some degree (and the last two are circular, which can generate a vicious circle of errors) and can lead to inefficiencies and cross-subsidies.

The possible risk of unbalance is not enough to request an extraordinary tariff review; a real fact must have occurred, i.e., the "contract" must already be unbalanced. Therefore, the extraordinary tariff review does not take place at any time, only after an imbalance. There is some jurisprudence about that.

Furthermore, the re-equilibrium is not a discretionary act of the Regulator. He can only refuse granting you in one of the following situations:

- No real increase in charges;

- Occurrence of the event prior to the winning proposal (in cases of bids at auctions);
- Absence of a causal link between the events; and
- Bad management signs and guilt (intention) of the company for increasing his charges.

In case of port authorities that are government-owned, the lack of a contractual provision does not affect the application of the re-equilibrium model, because its foundation is not contractual, it is legal.

The Regulator should define an incentive-based regulation scheme that minimizes uncertainties and reduces information asymmetry, with a main driver of incentives for cost reduction during the tariff revisions period. During the intervals between tariff revisions, the Brazilian regulator applies a price-cap readjustment methodology.

In this model, a tariff cycle is imposed, which consists of the corresponding period of time between two ordinary tariff revisions, comprising a minimum period of 03 (three) years and a maximum of 05 (five) years, according to ANTAQ. It also informs that the first cycle, in existing contracts, begins with an extraordinary review. See Table 2 that the cycle starts with an extraordinary review.

Table 2: The tariff cycle to Brazilian ports

Procedure	Period
1st Extraordinary Review	year 0
Annual readjustments	Year 1,2, 3 and 4
1st Ordinary Review	Year 5
Annual Readjustments...	Year 6, 7, 8 and 9

First year, RN 32/2019 says that the extraordinary tariff revisions will be carried out at a request and promotion by the Regulator, ex officio. This will be the opportunity to contemplate the migration from the current tariff structure to the structure standardized by ANTAQ. Normally, every year or at the end of each Tariff Cycle, the Agency publishes calendars for companies in order to present their claims for annual readjustment or for an ordinary tariff review within a fixed period, which may coincide with the contract anniversary date.

Now it is finally necessary to state: applying the rate of return method is always difficult for Brazilian government agencies. This is explained below.

First, the regulation by rate-of-return method, given the complexity of its operation, is an appropriate method only when cost and demand conditions do not change significantly in short periods of time, i.e, when costs and demand are relatively stable. In the opposite situation, this process becomes much slower. In this condition, the cost and demand estimate is impaired for a medium period, say four or five years ahead, making it difficult to find the equilibrium parameters of the equation: what will be the Total Revenue and what will it be the Total Cost of the firm, remembering that the natural monopoly has that characteristic of subadditive cost: the more it produces, the lower the cost per unit. It seems to be the case in the Brazilian port sector, generally having annual incremental demand at a rate of less than 4% in most cases. Furthermore, it is known that variable costs in port authorities are substantially reduced when compared to fixed costs, a condition that inhibits the application of pricing techniques related to marginal cost, which also depends on knowledge of a more accurate demand curve (MONTEIRO, 2017).

Second, applying only regulation by rate of return, there are no incentives for the firm to seek efficiency, due all costs are passed on to consumers, and as companies' efforts to reduce costs do not increase their profits. The non-exogenous behavior of costs must be considered: the charging form affects the cost of production of the service. The doctrine shows us the existence of the Averch-Johnson effect (over investments).

Finally, the regulation by rate of return requires a lot of information to be submitted to, lacking a good deal of confidence um some of those.

However, the Cost of Service model still persists in Brazil, especially when we observe the presence of state-owned companies as service providers, or even private concessionaires, which is the model adopted by ANTAQ, with increments related to performance (productivity) and value (elasticity), as recommended by UNCTAD (1995).

c) *Practical model of regular tariff review*

In order to present projects, Article 16 of RN 32/2019 sets out a list of requirements to be attended by port authorities, as shown in Figure 1:

I - REFERENCE MARKET OF THE PREVIOUS PERIOD
● Current tariff structure; and ● Profit & Losses Statements according to the Regulatory Chart of Accounts, informing: ○ Operating income, supplementary income, accessory income, income from leasing contracts and financial income, calculated monthly; ○ Financial expenses, costs allocated to leasing contracts and costs of ancillary revenues calculated monthly; ○ Direct costs, indirect costs and administrative expenses calculated monthly
II - REFERENCE MARKET FOR THE SUBSEQUENT PERIOD
● Proposed tariff structure and the relationship between the proposed structure and the current one; and ● Profit & Losses Statements according to the Regulatory Chart of Accounts, in a projected manner;
III - THE COSTING METHOD FOR THE PRECEDING AND SUBSEQUENT PERIOD
● Percentages to the appropriation of Indirect Costs and Administrative Expenses in the tariff groups; ● The internal weights for distributing the costs of each group in each of the tariff modalities of the respective group;
IV - SALES AND PROJECTED DEMAND
● Invoices in the previous reference period, by tariff modality; ● Average monthly demand project, by each tariff modality.

Fig. 1: Essential data for making a review project

If there are no demand or cost studies for the subsequent period, the same trend line in the previous period will be adopted and the same average costs and other non-tariff revenues for the subsequent period, month by month, of the preceding period. In the case of new tariff modalities, without previous invoicing, the port authority must present demand estimates (to be obtained directly from the users), and an initial estimated price, such as an original price.

As an objective function, the tariff review will assess, for a given port authority, the annual Operating Profit [OP] of each Tariff Group "j" or the sum "k" of them, in the following sequence: Initially, the Operating Profit of the current Tariff Structure will be evaluated, considering the Previous Reference Market of the port administration and then the new proposed Tariff Structure will be simulated, in the following scenarios (Table 3).

Table 3: Description of Proposed Scenarios - possible simulations

SCENARIO	DESCRIPTION	FEATURES
Balanced (linear adjustment)	Scenario nullifying the total Operating Profit, considering the subsequent Reference Market, through an identical Linear Adjustment Index for all tariff modalities.	Balances the total cost without changing revenue allocations among users. Less impact for users as it only reproduces the status quo.
Price = Specific Average Cost	Scenario nullifying the total Operating Profit, considering the subsequent new Reference Market, through the calculation of new prices for the tariff modalities, so that the price of each modality is equal to the average cost of each product.	Balances total cost by changing revenue allocations among users to equal cost equal to revenue. Impact for users, however, tariffs tend to become more neutral, without cross-subsidies.
Positive (cross subsidy with N-products)	Positive total Operating Profit scenario, considering the new Reference Market, by calculating new prices for the structure's tariff modalities, so that the price of each modality is equal to the average cost of the product multiplied by its mark-up. The mark-up can be unique for all modalities, or chosen individually, positive or negative, due to demand elasticities (see Ramsey's Rule).	Balances the total cost by shifting revenue allocations between users unevenly. Starting from the real average cost, it is possible to practice a flexible commercial policy aiming at maximum revenue capture according to the marginal utility of each user, reducing deadweight loss, without harm to users. Explore the demand curve.

After analysis of scenarios, the current Tariff Structure and the proposed Tariff Structure will be characterized in one of the following situations: Balanced or Unbalanced. It will be considered Balanced, in general, the Tariff Structure k that provides a total Operating Profit equal to or greater than zero for the next twelve months. In this model, the Operating Profit level replaces the rate of return concept.

The scenarios indicate that the port tariff will have a ceiling price based on the composition of three dimensions: cost (expenses to deliver the product), performance (level of capacity and productivity) and value (marginal utility or consumer elasticity).

The model can be described in the following flowchart (Figures 2 and 3).

Tariff Review Basic Flow
1 - Inform current tariff structure, to be revised (prior period);
2 - Define the proposed structure, highlighting the inclusions and exclusions (subsequent period);
3 - Inform market data (average monthly movement in the last 36 months and average monthly demand projected for 36 months ahead), for each tariff modality. Also inform the installed capacity, to assess the utilization factor (the higher, the higher the productivity);
4 - Inform the values of the Income Statement accounts for the last 36 months, that is, Operating Revenues, Alternative Revenues and Financial Revenues Costs (Direct by Tariff Group, and Indirect) and Expenses, including Financial Expenses;
5 - Report:
A. For the previous period, the apportionment percentages in indirect costing and administrative expenses, aiming at the allocation of these costs in each Tariff Group (full absorption method); B. For the preceding and subsequent period, the internal weights of the items that make up the efficient operating costs in each Tariff Group, that is, drivers that represent the loading and distribution of expenses in each tariff modality in relation to the expenses appropriated for the respective tariff group ; C. For the subsequent period: a. The increase in average production costs, monthly direct and indirect, and other monthly expenses, appropriated by tariff group, in average monthly terms (the higher the increase, the lower the productivity); b. The amount of investments in capital goods, in annual installments to be amortized; c. Forecasting alternative revenues and installments from other sources, including non-operating revenues, in average monthly terms;
6 - Compose all the data and simulate the price-ceiling scenarios, comparing the current scenario with the scenarios of the subsequent period, observing the particularity of each scenario regarding commercial strategy, contribution margin and the expected level of return (operating profit) ;
7 - Choose the favorite scenario and send it for analysis by ANTAQ.

Fig. 2: Flowchart of a tariff review proposal. Vision 1 (tasks)

<table>
<tr><th>IMPUT ⇒</th><th>PROCESS ⇒</th><th>OUTPUT</th></tr>
<tr><td>Date of last review</td><td rowspan="4">Analysis of current unbalance level</td><td rowspan="3">Ceiling price of each tariff modality (new tariff)</td></tr>
<tr><td>Current and future Tariff Structure (groups, modalities, ceiling price, exemptions and rules)</td></tr>
<tr><td>Fixed, Variable, Direct and Indirect Costs. Administrative costs. Current and projected</td></tr>
<tr><td>Apportionment Percentages. Cost Drivers</td><td rowspan="3">Contribution Margin of each Tariff Group</td></tr>
<tr><td>Investments to expand infrastructure</td><td rowspan="2">Generation of future scenarios, at a new equilibrium level</td></tr>
<tr><td>Sales (current average demand and in the next 36 months)</td></tr>
</table>

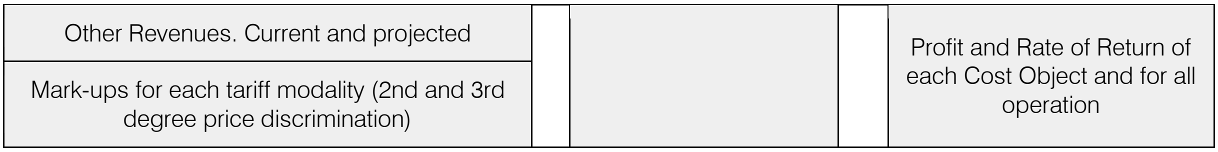

Fig. 3: Flowchart of a tariff review proposal. Vision 2 (phases)

Other indicators to be used for the evaluation of the proposal are the following:

Average Readjustment Index (ATI): percentage change in tariff collection, considering the previous moment. It's the user's vision; and

Average Tariff Effect (ATE): percentage change in total collection, considering the previous moment. It is the port´s view.

The boundary conditions for the model's operation are as follows:

i. Cost accounting and tariff groups: standardization of the tariff structure in similar groups related to the cost objects of regulatory accounting;
ii. Reliable projection of demand for cargo handling: consideration of seasonality, cyclical patterns, likely entry and exit of competitors, new contracts;
iii. Disclosure of a tariff cycle calendar to increase predictability to users: Creation of a regular reference period and deadlines for companies to present their tariff review and readjustment project.

d) Extraordinary tariff reviews

An extraordinary tariff review will adopt the same methodology used in the ordinary review. However, according to the doctrine, the projects for extraordinary tariff reviews must identify the causal link responsible for the imbalance.

The instruction of requests for extraordinary tariff review shall inform the occurrence of an effective economic and financial imbalance, already manifested, or an economic and financial imbalance not yet manifested, if and only if the project considers an annual amortization of future investments in infrastructure to be covered by the tariff.

In these cases, requests for additional tariff revenues to cover capital expenditures on future investments in port infrastructure must be linked to a physical-financial schedule, agreed upon with the Regulator. When considering the use of some level of third-party capital, the non-governmental bank institution should not be remunerated through an interest rate above that normally practiced by the market.

The events giving rise to extraordinary review are (causal link):

- Increase or decrease in capacity;
- Exogenous variation of operating costs;
- Change in legislation or regulation that impacts business;
- Natural accidents and claims do not covered by insurance;
- Legal taxes change, except income tax;
- Strikes and riots.

Table 4: Current Tariff Structure

Tariff Group	Cost object[1]	Item	Tariff Mode (incidence form)	Charged modality[2]	Ceiling price in A0 - Tpi (BRL)	Average monthly demand in A0	Projected average monthly demand in A1
I	Maritime Infrastructure	1	Fixed fee for waterway access of a vessel	Yes	2,300.00	600	660
		2	Per ton of cargo handled at the port	Not			
		2.1	For long-haul operations	Yes	38.00	166670	183337
		2.2	For coastal or inland navigation operations	Yes	55.00	100,002	110,002
II	Berthing Infrastructure	1	To the main crib	Not			
		1.1	Per linear meter of installation occupied by vessel, per hour or fraction, up to a limit of 24 hours.	Yes	160.00	20000	22000
		1.2	Per linear meter of installation occupied by vessel, per hour or fraction, after 24 hours.	Yes	330.00	12000	13200

[1] According to Table 67 of the ANTAQ Manual of Accounting to Port Authorities, 2017 version.
[2] Non-charged modalities are those that are at a higher hierarchy level than the subsequent ones. They have no price, just in the lowest level.

III. Case Study

In the following test, in order to simplify the demonstration, we will assume the existence of two tariff groups, as in Table 4, associated with two cost objects and respective tariff modalities. To simplify further, there will be no changes in the structure, keeping the tariff modalities for the next period, without additions or exclusions. We have two different moments: year A0 (year of start) and year A1 (year to be rebalanced). After evaluating the current equilibrium level, the goal is to find a new ceiling price for tariffs in the A1 period, at a new equilibrium level.

The costing method, for tariff purposes, was discussed in Technical Note No. 64/2017/GRP/SRG (ANTAQ, 2017c) and Technical Note No. 50/2017/GRP/SRG (ANTAQ, 2017b). It is a kind of Integral (full) Absorption Costing. However, Activity-Based Costing (ABC) method is also allowed, as a form of management improvement.

Absorption Costing is simple, suitable for mid-sized companies and provides a lot of information. It's a cost method that includes all manufacturing costs - direct materials, direct labour, and both variable and fixed overhead (indirect costs) - in unit product cost. Integral costing method is a principle whereby fixed as well as variable costs are allocated to the cost unit. On the other hand, absorption costing involves the appointment of overhead, which can be subjective. The resulting information can be misleading for management decision-making.

ANTAQ defends that the "main merit of the Integral Costing Method is the fact that all expenses incurred in an organization are taken into account, without exceptions. In it, we have the total recovery of all company expenses for the delivery of a given cost object. This results in more complete unit cost information. However, it differs from the conventional Absorption Method, as even the No-product cost (expenses, selling, administrative, lawyers, for example) are allocated to cost centers (or cost objects) - however, it has a very similar logic to that."

Using this method, costs that are assigned to cost objects can be divided into two categories: direct cost and indirect costs. Direct costs are those costs that can be specifically and exclusively identified with a particular cost object. In contrast, indirect cost cannot be exclusively with a given cost object.

ANTAQ mapped Nine Cost Objects for Brazilian port authorities, and transposes these objects into the tariff structure, because they are intimately connected with the tariff tables. Objects are the aggregation of different tariff modalities that have a high degree of affinity with each other regarding the products supplied or of type of users.

In the Integral Costing Method, the product offered by the company is responsible for absorbing all charges. Indirect costs must be allocated to the costing objects using apportionment criteria. ANTAQ assumes that there should be a proportional relationship between type of cost and the costing objects (indirect costs should be smaller compared to direct costs, for example).

The apportionment is carried out using indices that will direct the distribution of the Indirect Cost (and General Expenses) to the cost objects. Then, the percentage that the products consume of the adopted index is estimated. They then settle the overhead based on that percentage. All expenses related to the production and delivery effort are, therefore, distributed to all products or services offered. To reduce the arbitrariness of the Costing Method, there must be a cause and effect relationship between the distribution parameter and the volume of indirect cost. The variations that determine how the entity's resources are used by the costing objects must also be identified.

The hypothetical apportionment percentages to be used (both for the preceding and subsequent periods) in the case study are in Table 5:

Table 5: Costing Percentages

		% of Indirect Costs				% of Expenses						
Cost Objects	Tariff group	Labour	3rd Party Services	Materials	Other Costs	Labour	Utilities	3rd Party Services	Miscellaneous	Rent	Marketing	Depreciation & amortization
Maritime Infrastructure	I	82	82	82	95	82	82	82	95	65	95	65
Docking Infrastructure	II	18	18	18	5	18	18	18	5	35	5	35

Consider the following accounting statement for the preceding period, following the chat account in the ANTAQ Manual of Accounting (ANTAQ, 2017a) (Table 6):

Table 6: Profit & Loss Statement for the previous period

Chart of Account - Code	Degree	Account Title	Monthly average for the previous 36 months (BRL)
3	1st	INCOME REVENUES	
3.01	2nd	Gross Revenue from Port Services	
3.01.01	3rd	Waterway Access Infrastructure	15,500,000.00
3.01.02	3rd	Berthing Infrastructure	8,500,000.00
3.01.08	3rd	Leasing Agreements	300,000.00
3.01.10	3rd	Alternative Recipes	
3.01.10.02	4th	Other operating income	192,000
3.01.10.03	4th	Complementary Sales	259,000
3.01.10.04	4th	Accessory Sales	343,000
4	1st	PRODUCTION COSTS	
4.01	2nd	Maritime Infrastructure	9,000,000
4.02	2nd	Berthing Infrastructure	4,500,000
4.08	2nd	Lease Agreements	25,000
4.10	2nd	Indirect costs	3,000,000
4.10.01	3rd	Labour (salaries & benefits)	1,500,000
4.10.02	3rd	Services	500,000
4.10.03	3rd	Materials	500,000
4.10.04	3rd	Others	500,000
4.12	2nd	Costs Allocated to Complementary Sales	
4.13	2nd	Costs Allocated to Accessory Sales	25,000
5	1st	GROSS PROFIT (3 - 4)	
6	1st	EXPENSES	
6.01	2nd	Administrative	3,900,00
6.01.01	3rd	Labour (salaries & benefits)	1,950,000
6.01.02	3rd	Third Party Services	390,000
6.01.03	3rd	Utilities & Telecommunication	390,000
6.01.04	3rd	Miscellaneous costs	390,000
6.01.06	3rd	Rent	390,000
6.01.07	3rd	Marketing & Branding	390,000
6.03	2nd	Depreciation & Amortization	780,000
8.01	2nd	Financial	
8.01.01	3rd	Interest income	50,000
8.01.02	3rd	Interest expenses	45,000

Setting all these initial parameters, it is possible to start the Process phase. An analysis of the Current Scenario indicates an unbalanced situation, as shown in Table 7 (Steps 1, 2 and 3).

Table 7: Analysis of the Current Scenario (current tariff structure)

Step 1: Cost Dispersion

Group / Cost object	Item	Tariff Modality (incidence form)	Charged	Ceiling price without adjustment or revision Tpi [BRL]	Average monthly demand in A0	Direct Cost - CDj [BRL]	Total Indirect Costs - CI [BRL]	Percentage rate for allocation of indirect costs in the Group [%]	Indirect costs in the group - CIj [BRL]
I / Maritime Infrastructure	1	Fixed fee for waterway access of a vessel	Yes	2,300.00	600	9,000,000	3,000,000.00	**84%**	2,525,000
	2	Variable tariff, by the deadweight tonnage of the vessel	Not						
	2.1	For long-haul operations	Yes	38.00	166670				
	2.2	For coastal or inland navigation operations	Yes	55.00	100,002				
II / Berthing Infrastructure	1	To the main berth	Not			4,500,000		**16%**	475,000
	1.1	Per linear meter occupied by vessel, per hour or fraction, up to a limit of 48 hours.	Yes	160.00	20000				
	1.2	Per linear meter occupied by vessel, per hour or fraction, after 48 hours.	Yes	330.00	12000				
						13,500,000		100%	3,000,000

Step 2: Dispersion of Revenues

Group / Cost object	Item	Tariff Modality (incidence form)	Charged		Average monthly demand in A0	Monthly tariff revenue - RmT A0i [BRL]	Annual tariff revenue - RAT A0i [BRL]	Annual tariff revenue - RAT A0j [BRL]	Proportional Expenses to Billing - DPF [%]
I / Maritime Infrastructure	1	Fixed fee for waterway access of a vessel	Yes		600	1,380,000.00	16,560,000	158,562,840.00	14.25
	2	Variable tariff, by the deadweight tonnage of the vessel	Not			-			14.25
	2.1	For long-haul operations	Yes		166670	6,333,460	76,001,520		14.25
	2.2	For coastal or inland navigation operations	Yes		100,002	5,500,110	66,001,320		14.25
II / Berthing Infrastructure	1	To the main berth	Not			-		85,920,000.00	14.25
	1.1	Per linear meter occupied by vessel, per hour or	Yes		20000	3,200,000.00	38,400,000		14.25

		fraction, up to a limit of 48 hours.							
	1.2	Per linear meter occupied by vessel, per hour or fraction, after 48 hours.	Yes		12000	3,960,000.00	47,520,000		14.25

Annual Tariff Revenue - RAT A0k [BRL]	**244,482,840.00**
Other Operating Revenues - DMA A0k [BRL]	61,120,710.00
Operating Revenues - RO A0k [BRL] = RAT + DMA	305,603,550.00
Non-Operating Revenue - RNOV A0k [BRL]	6,112,071.00
Verified Annual Revenue - RAV A0k [BRL] = RO + RNOV	**311,715,621.00**

Step 3: Dispersion of Operating Income

Group Cost object	Item	Tariff Modality (incidence form)	Charged		Annual Net Revenue of the A0i Group - RLi [BRL]	Annual Operating Cost of Group j - COji [BRL]	Group Contribution Semi-Gross Margin - MSBC A0ij [BRL]	Annual Administrative Expenses of the group – DAi [BRL]	Annual Operating Profit of the Group – LOj A0j [BRL]
I / Maritime Infrastructure	1	Fixed fee for waterway access of a vessel	Yes		135,967,635.30	138,300,000	- 2,332,364.70	44,881,200	-47,213,564.70
	two	Variable tariff, by the deadweight tonnage of the vessel	Not						
	2.1	For long-haul operations	Yes						
	2.2	For coastal or inland navigation operations	Yes						
II / Berthing Infrastructure	1	To the main berth	Not		73,676,400.00	59,700,000	13,976,400	11,278,800	2,697,600
	1.1	Per linear meter occupied by vessel, per hour or fraction, up to a limit of 48 hours.	Yes						
	1.2	Per linear meter occupied by vessel, per hour or fraction, after 48 hours.	Yes						
							11,644,035.30	**56,160,000.00**	
Total Annual Operating Profit of the structure - OP A0k [BRL]								-44,515,964.70	
Annual Operating Profit of the structure - OP, in relation to Gross Tariff Revenue - RAT [%]									-18.21

The Operating Profit of -18.21%, as shown in Table 7 in Step 3, proves the unbalance in the current tariff structure.

Then, in the Output phase, assuming, in our hypothetical case, a 10% growth in costs and expenses for the subsequent period and promoting a Scenario in which the tariff is equal to the average cost (P = Cme = Total Cost / Average Demand), redoing all the calculations in the previous table, the Operating Profit (IRR) would be would be nullified, and the final result will be a Balanced Situation, with the following prices-cap (Table 8):

Table 8: Analysis of the Average Cost Scenario - Subsequent Period

Group I			
Maritime Access Infrastructure			
ITEM	TARIFF MODALITY / FORM OF INCIDENCE	Current Rate / Price-Cap in A0	Rate Equal to Average Cost / New Price Cap in A1
1	Fixed fee for waterway access of a vessel	BRL 2,300.00	**BRL 3,022.96**
2	Variable tariff, by the deadweight tonnage of the vessel		
2.1	For long-haul operations	BRL 38.00	**BRL 48.97**
2.2	For coastal or inland navigation operations	BRL 55.00	**BRL 81.62**
Group II			
Berthing Facilities			
ITEM	TARIFF MODALITY / FORM OF INCIDENCE	Current Rate / Price-Cap in A0	Rate Equal to Average Cost / New Price Cap in A1
1	To the main berth		-
1.1	Per linear meter occupied by vessel, per hour or fraction, up to a limit of 48 hours.	BRL 160.00	**BRL 156.73**
1.2	Per linear meter occupied by vessel, per hour or fraction, after 48 hours.	BRL 330.00	**BRL 319.26**

Still in the Output phase, other positive scenarios can be simulated, such as, for example, a positive profit of 10%, applying individual markups in the modalities (discriminating, applying the Ramsey Rule) or even a general linear percentage for all of them (without internal cross-subsidization).

Restricting the test to the "Tariff Equal to Average Cost" Scenario, the final result of the analysis indicates the following summarized data (Table 9):

Table 9: Result of scenario analysis (comparative)

	CURRENT / CURRENT SCENARIO	FUTURE SCENARIO / TARIFF = AVERAGE COST
	Year A0	Year A1
OPERATING REVENUES - RO		
Annual Tariff Revenue - RAT		
Group 1	BRL 158,562,840.00	BRL 239,418,404.48
Group 2	BRL 85,920,000.00	BRL 91,946,186.14
Subtotal 1	BRL 244,482,840.00	BRL 331,364,590.62
Revenue from Lease Agreements	BRL 300,000.00	BRL 310,000.00
Accessory Revenues	BRL 343,000.00	BRL 350,000.00
Complementary Revenues	BRL 259,000.00	BRL 260,000.00
Other Operating Income	BRL 192,000.00	BRL 195,000.00
Subtotal 2	BRL 1,094,000.00	BRL 1,115,000.00
NON-OPERATING REVENUES - RNO		
Financial income	BRL 50,000.00	BRL 51,000.00
Subtotal 3	BRL 50,000.00	BRL 51,000.00
VERIFIED ANNUAL REVENUE (RAV = RO + RNO)	BRL 245,626,840.00	BRL 332,530,590.62
REQUIRED ANNUAL TARIFF REVENUE (REQ)		BRL 331,364,590.62

ANNUAL COSTING		
Operational cost		
Direct cost	BRL 162,000,000.00	BRL 178,200,000.00
Indirect cost	BRL 36,000,000.00	BRL 43,200,000.00
Administrative costs	BRL 56,160,000.00	BRL 62,712,000.00
Financial expenses	BRL 540,000	BRL 564,000.00
Lease Contract Costs	BRL 300,000.00	BRL 330,000.00
Costs with Accessory Revenues	BRL 300,000.00	BRL 330,000.00
Total Annual Production Cost (CTPA)	BRL 255,300,000.00	BRL 285,336,000.00
PROFITABILITY		
Gross Margin (Total Revenue / Total Cost) BRL	-BRL 9,673,160.00	BRL 47,194,590.62
Gross Margin (Total Revenue / Total Cost) %	-3.79%	16.54%
Operating Income	-BRL 44,515,964.70	BRL 33,136.46
Operating Profit %	-18.21%	0.01%
Situation	Unbalanced	Balanced
ALLOWED ANNUAL REVENUE (RAP)		BRL 332,530,590.62
Average Readjustment Index (ARI)		35.54%
Average Tariff Effect (ATE)		35.38%

IV. Conclusion

This study demonstrated a mathematical and economic model, based on efficient allocation costs, to be applied for tariff review by port authorities and all public ports - controlled by the federal government or even concessionaires (although concession contracts may contain their own specific rules). This proposal is being gradually implemented by the Agency during the years 2021 and 2022. As we see, it allows the search to various points of balance, to be tested by the company and negotiated with the Regulator, assisting in a price sensitivity analysis.

There are advantages and disadvantages.

Advantages: the profit of the port authority is monitored (a kind of "supervised freedom"), so that only the cost plus a certain percentage is paid by the consumers. In theory, this cost would fall, as the contract progresses in time, and the efficiency gains would be passed on to the consumer, preventing an arbitrary profit.

Disadvantages: as we guarantee a minimum rate of profit for the entrepreneur, it does not provide sufficient stimulus to increase efficiency, which is important in face of technological changes. The inverse of the expected would then happen: the price, discounted for inflation, would rise over time, or, the quality would fall. Therefore, it should be used together with other instruments, as a productivity factor (X Factor) within regular annual readjustments in a cycle logic.

The model presented here contributes to a reduction of uncertainties. Demonstrates something viable in efficiently allocating resources. It is flexible enough to be adopted by service providers, because it does not remove the possibility of a positive profit and of establishing a commercial policy aiming at maximizing total revenue. It also provides transparency and predictability to the market. To obtain the final price, other elements can be added to the cost, such as, for example, the perspective of added value to the consumer and productivity, a theme for the next paper.

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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 e-commerce 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.

Keywords: *e-commerce, B2C, developing countries, shanghai cooperation organization, SCO.*

GJMBR-B Classification: *JEL Code: L81*

DEMOGRAPHICANDCULTURALFACTORSINFLUENCINGTHEADOPTIONOFB2CECOMMERCEINSCOREGION

Strictly as per the compliance and regulations of:

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 e-commerce 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.

Results: For the individuals perspective this study results showed that main E-commerce users in SCO countries are employed young females with high education and high income. For the nationals perspective countries with high individualism with low uncertainty avoidance and more restraint are more active in E-commerce. But power distance, masculinity, long term orientation indexes did not show any significant results.

Conclusions: SCO, as one of the main intergovernmental organizations in Eurasia, is taking measures to develop e-commerce in the region. However, SCO member states vary in terms of e-commerce due to dissimilar economic situations and cultural differences. Therefore it is important for the officials to see and learn the country's differences and there is a certain vacancy for the males and older buyers that can be used as an key to open new market and develop E-commerce in the future.

Shanghai Cooperation Organization (SCO), as one of the main intergovernmental organizations in Eurasia, is taking measures to develop e-commerce in the region. However, SCO member states vary interms of e-commerce experience due to dissimilar economic situations and cultural difference.

The purpose of this paper is to examine the factors that affect B2C e-commerce adoption in the SCO region. The main objective of the study is to integrate the demographic characteristics with Hofstede's cultural dimensions in order to determine the factors of e-commerce adoption among consumers in SCO member states.

Result shows in SCO countries, e-commerce adoption is more spread amongst young females who are currently employed, and therefore have high education level and income. From the national cultures perspective SCO member countries with high individualism, low uncertainty avoidance and low indulgence level have more e-commerce costumers than the other SCO member states.

Keywords: e-commerce, B2C, developing countries, shanghai cooperation organization, SCO.

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I. Introduction

Increasing from 400 million in 2000 to more than 4.72 billion users as of April 2021 [1], 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)

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[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], 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 e-commerce studies are focusing on consumers and enterprises of developed countries, and very few are conducted on developing or least developed countries.

1 https://wearesocial.com/us/blog/2021/04/60-percent-of-the-worlds-population-is-now-online

2 https://unctad.org/news/global-e-commerce-jumps-267-trillion-covid-19-boosts-online-sales

3 http://sdg.iisd.org/news/unctad-reviews-covid-19-impact-on-e-commerce-digital-trade

(Richard et.al, 2008; Robert Jeyakuamr, 2009; Japhet E et.al, 2010) As developed countries are mostly hyper-digitalized, 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, socio-economic 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 e-commerce 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 e-commerce 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.

II. Literature Review

a) E-commerce adoption factors and findings

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., Shahriari 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 (Margarital šoraitė 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; Kariyawasam 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; Hassan et.al, 2014; Alice, 2007) When it comes to technology adoption most of the researchers are using Technology Acceptance Model, Theory of Reasoned Actions, Theory of Planned Behavior as base theories, and DeLone and McLean model in the information systems model (Kamel et.al, 2015; Yi-Shun, 2008; Mei Cao et.al, 2005; Palumbo F, 1998).

B2C adoption factors studies can be divided into two sections: behavioral and segmentation. Behavioral issues articles are focusing on shopping motivation (Scarpi D et.al, 2014; Davis Ret.al, 2014; Chiu CM et.al, 2014), emotional factors (Chou SW et.al, 2015; 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; Zhang 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. (Thamizhvanan et.al, 2013; Spake DF et.al, 2011) Furthermore, as e-commerce consumers consist of heterogonous groups with different needs and expectations, researchers analyzed consumers based on demographic characteristics (Farid et. al, 2016; Jung Wan, 2010). Conclusions state that the young, unmarried male population (Clemes et. al, 2014; Jayawardhena et. al, 2007) is more engaged in online shopping while income and education level (Clemes et.al, 2014; Bhatnagar A, 2007) can influence the e-commerce adoption and implementation among them.

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; Alexander Y et.al, 2006), very few studies were conducted on this matter. (Smith R et. al, 2013; Kim J et. al, 2013; Mee LY et. al, 2015).

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

b) SCO cooperation for e-commerce development

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 7th 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.

c) B2C e-commerce in SCO member states

One of the most reliable B2C e-commerce indicators is the UNCTAD B2C e-commerce index, 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 shows SCO member states ranking in UNCTAD B2C e-commerce index from2016-2020:

[4] 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

Table 1: SCO member states'UNCTADB2C e-commerce index

MemberState	B2Ce-commerceindex				
	2016*	2017**	2018**	2019***	2020***
China****	64	65	63	56	55
India	90	83	80	73	71
Kazakhstan	88	51	53	57	60
Kyrgyzstan	109	117	114	111	97
Pakistan	105	120	117	114	116
Russia	47	43	42	40	41
Tajikistan	-	-	-	129	121
Uzbekistan	108	106	86	93	107

* Ranking among 137 countries
** Ranking among 151 countries
*** Ranking among 152 countries
**** China Mainland

Russia was ranked 41st among 152 countries in the UNCTAD index and it's the highest index among SCO member states. Although China is leading in terms of e-commerce sales in the world, it was ranked 55th because UNCTAD variables are focused on connection quality and banking services rather than e-commerce sales scale. From 2016 until 2018 Tajikistan B2C e-commerce wasn't indexed and as of 2020, Tajikistan was ranked 121st, which is the lowest index among SCO member states. Overall the average ranking of SCO member states in theUNCTADB2C e-commerce index was 83rd in 2020.

According to the Digital 2021 Global Overview Report, SCO member states have 1.8 billion internet users and only 545 million of them made the online purchase and/or paid bills online. The detailed data is shown below:

Table 2: SCO member states internet penetration rate and B2C e-commerce statistics.

Member State	Total population (million)**	Total internet users (million)	Internet penetration (%)	Users, who make an online purchase and/or pays bills Online (million)	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]. 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]. With almost 82 percent internet penetration and 3.8 million online shoppers Kazakhstan leads the B2C e-commerce among Central Asia and Caucasus countries (ResearchAndMarkets.com, 2019). In 2019 the 2000 local online stores and 13 online platforms were operating in Kazakhstan with USD 980

[9] https://unctad.org/news/global-e-commerce-jumps-267-trillion-covid-19-boosts-online-sales

[10] https://www.statista.com/study/85345/ecommerce-in-pakistan/#0

million purchase locally and USD 650 million internationally[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 e-commerce 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], 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 e-commerce 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; WuSi, 2003; AfizahH et. al, 2009;BenekeJ et. al, 2010; Leo Sin et. al, 2001)

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; IbrahimA. et. al, 2014). Therefore, we have are search gap on demographic factors, which influence the e-commerce adoption in SCO member states.

Age According to Hwang and James (Hwanget.al, 2006; James W. et.al, 2017), retailers and marketers should consider different age groups, as they have different online purchasing behavior. Chaney and Williams (Chaney et.al, 2017; Williams et.al, 2011) 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 different age groups reported that each generation differs by preferences and values, which forms choices, methods for shopping. Jokisuu (Jokisuu et. al, 2007) stated that age-relate dissues for older people such as deteriorating eyesight, motor functions, and cognitive capabilities are causing problems for thee-commerce adoption. This view was broadened by Donna and Reisenwitz (Donna W. et. al, 2010; Reisenwitz et.al, 2009), who reported that people born between 1930-1945 are not likely to use information technologies and therefore don't purchase online much. 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; Reisenwitz TH et.al, 2009; Jokisuu E. et.al, 2007; VigilK, 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; Bhatnagar 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., 2017; Priporas et.al., 2017; Jorge Viera et.al., 2020) characterized them as generations with trust and experience in technologies, who are doing a lot of research before purchasing and like to share their opinions on digital platforms.

Therefore, the following hypothesis is proposed:

Hypothesis 1:

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

Gender

Men and women differ not only in physical roles, but also in consumer behavior (Mitchell et.al, 2004), adoption of technology (Slyke et.al, 2010; Frederick P et.al, 2018), and the question of how much they differ in online purchase requires empirical research.

[11] https://primeminister.kz/ru/news/obem-rynka-elektronnoy-torgovli-za-i-polugodie-2020-goda-sostavil-435-mlrd-tenge-2861921
[12] https://kursiv.kz/news/rynki/2020-06/za-10-let-obem-rynka-elektronnoy-torgovli-v-kazakhstane-vyros-v-20-raz
[13] https://yuz.uz/ru/news/elektronnaya-torgovlya-v-mire-i-uzbekistane
[14] https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=26386

Gender difference in e-commerce has been observed from diverse perspectives, such as the perceived risk of online behavior (Garbarino E et.al, 2004), and technology acceptance (Ali et.al, 2007; Constance P et.al, 2006), etc. In terms of technology acceptance and usage, several studies state that men are more technology-oriented, and therefore use the internet more than women (Villarejo-Ramos et.al, 2014; Werner et.al, 2011). In line with these studies, Sebastianello, Vake, and Chang (Slyke et.al, 2010; Sebastianelli R et.al, 2008; Chang M.K et.al, 2005) 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; Gichang 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.

Hypothesis 2:

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

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. (Sharon E et.al, 1987; Mathwick C. et.al, 2001; Punj G, 2011). Tan, Wu Si, Afizah, Beneke, Leo (Tan et.al, 2000; Wu Si, 2003; Afizah Hashim et.al, 2009; Beneke, J. et.al, 2010; Leo Sin et.al, 2001) 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; Allred et.al, 206; Federici T, 2009; Chuang TT et.al, 2009), whose studies proved that education level and customer's tendency to shop online are positively related.

Despite to above, Eastman (Eastman J. et.al, 2004) and Donna (Donna W.et.al, 2010) studies stated that education is negatively correlated with online purchase among people aged 65-85 years. Therefore, we propose the following hypothesis:

Hypothesis 3:

Online purchase is prevalent among higher educated consumers of SCO member states.

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; Siyal et.al, 2006; Haque 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; Punj G, 2011; Perez 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 (Punj G, 2011).

Based on the above assumptions, we propose the following:

Hypothesis 4:

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

Hypothesis 5:

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

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). Many researchers developed conceptual models analyzing Hofstede's cultural dimensions with consumers' online purchase behavior and e-commerce adoption and found a significant connections among them (Francesca P et.al, 2021; Zhi Yang et.al, 2019; Heli H. et.al, 2018; Eungkyu K. et.al, 2016; Kathryn M, 2011). Therefore Hofstede's six cultural dimensions will be analyzed in this paper: power distance and uncertainty avoidance indexes; individualism; masculinity; long or short-term orientation and finally, indulgence.

Power distance index

Power distance index (PDI) measures the country's power distribution and how citizens accept disposal of it. Due to unequal power distribution, most Asian countries have a high PDI index and hierarchical relationship between boss and employee. (Doney et.al, 1998; Yoon, 2009; Rinne et.al, 2013; Grazzini et al., 2020) On contrary, most western countries have a low PDI, and westerns more often consult with others and participate in decision making (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:

Hypothesis 6:

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

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:

Hypothesis 6:

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

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; Francesca et.al, 2021) studies revealed that e-commerce 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).

Hypothesis 8:

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

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 e-commerce (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 (Doney et.al, 1998;

Hofstede G, 2010; Francesca P et.al, 2021). Based on above assumptions, we propose the following hypothesis:

Hypothesis 9:

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

Long-versus short-term orientation

Short-term oriented cultures focus on virtues related to the past and current situations, while long-term 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-term-oriented SCO member states.

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:

Hypothesis 11:

Online purchase is prevalent among restraint SCO member states.

III. Research Methodology

a) Data source and description

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

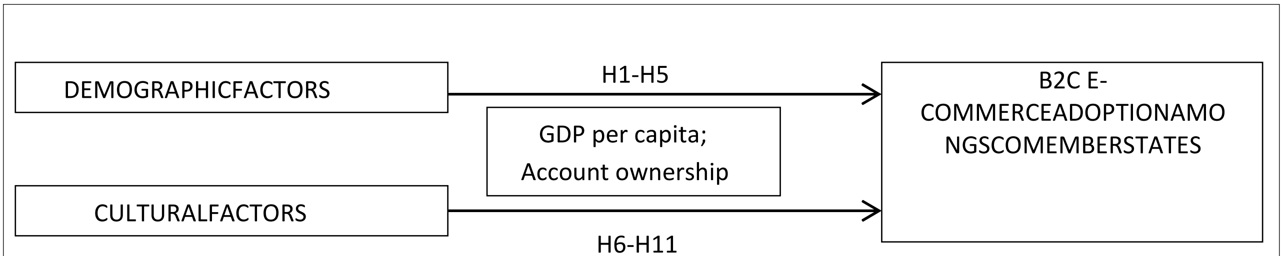

Figure 1: Research model

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:

Table 3: Definitions of variables

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	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
Masculinity	The degree to which gender has an influence on society's roles.	Hofstede
Uncertainty avoidance	The degree to which individuals respond and tolerate uncertainties and ambiguities.	Hofstede

Long-term orientation	The degree to which society relays to the future to solve the problems.	Hofstede
Indulgence	The degree to which society reacts to basic human needs and what social norms are followed.	Hofstede
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.

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:

Table 4: Correlation analysis of GDP and internet factors

SCO member states	Economic classification (income)	GDP percapita (USD mln)	Internet penetration rate (%)	Global cyber security index (outof100)	Total population (million)
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).

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).

Table 5: Demographic factors correlation analysis

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
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	Hasanaccountatfin.i 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	1.0000	
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	0.1851	1.0000

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.

Table 6: Hofstede's cultural dimensions of SCO member states

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

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.

Table 7: Overall descriptive statistic and correlation

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	1.000									
12	Richest20	0.1512	-0.0675	0.0519	-0.1930	0.0991	0.1535	0.0408	-0.2592	-0.2514	-0.2558	-0.2641	1.000								
13	Power distance	0.2087	0.2442	-0.0865	-0.3252	0.1919	0.2205	0.1112	-0.0105	0.0232	0.0179	-0.0019	-0.0274	1.000							
14	Individualism	-0.1169	-0.0668	-0.0202	-0.0845	0.0438	0.0666	-0.0072	-0.0493	0.0238	0.0192	-0.0033	0.0100	0.3794	1.000						
15	Masculinity	0.0660	0.0304	0.0756	0.4197	-0.2512	-0.2838	0.1096	0.0859	-0.0033	-0.0256	-0.0224	-0.0337	-0.2712	-0.3266	1.000					
16	Uncertainty avoidance	-0.0288	-0.0068	-0.0741	-0.4587	0.2791	0.3030	-0.0978	-0.0746	-0.0037	0.0219	0.0260	0.0294	0.2582	0.0295	-0.9346	1.000				
17	Long-term orientation	0.3256	0.3184	-0.0620	-0.1612	0.0964	0.1063	0.1344	0.0437	0.0060	-0.0015	-0.0054	-0.0415	0.6532	-0.4200	0.1472	0.0413	1.000			
18	Indulgence	0.1274	0.1521	-0.0178	-0.0011	-0.0032	0.0038	0.1507	0.0259	0.0251	0.0049	-0.0171	-0.0371	0.7175	0.5261	0.3301	-0.4208	0.3584	1.000		
19	Hasan account	0.2744	0.0406	0.0672	-0.1904	0.1006	0.1466	0.2030	-0.0981	-0.0472	0.0096	0.0451	0.0870	0.3513	0.2605	0.0558	-0.1103	0.1652	0.4136	1.000	
20	GDP percapita	0.3317	0.3301	-0.0708	-0.1777	0.1044	0.1200	0.1313	0.0382	0.0087	0.0009	-0.0058	-0.0407	0.7026	-0.3390	0.0774	0.740	0.9915	0.3772	0.1851	1.000

IV. 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:

Table 8: Overall correlation findings of e-commerce users in SCO

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 Fourth-positive Richest-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 purchasing behavior of respondents.

V. 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: Regression analysis of control variables							
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

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 to Table 12.

Table10: Regression analysis of demographic variables							
Source	SS	df	MS	Number of obsF(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 obsF(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)				

Indulgence	-.0096963	.0010453	-9.28	0.000	-.0117453	-.0076473
Has an account atfin.ins	.2063323	.0076082	27.12	0.000	.1914188	.2212458
GDP percapita	.0000355	1.64e-06	21.60	0.000	.0000322	.0000387
_CONS	.0248185	.0139067	1.78	0.074	-.0024411	.0520782

Table 12: Overall regression analysis

Source	SS	df	MS	Number of obsF(14,11027)	= =	11,042 399.40
Model Residual	514.811458 1015.24152	14 11.027	37.772247 .092068697	Prob> FR=squared	= =	0.0000 0.3365
Total	1530.05298	11,041	.138579203	Adj R-squared Root MSE	= =	0.3356 .30343

Purchased online	Coef.	Std.Err.	t	P>|t|	[95%Conf.Interval]	
Age	-.0069661	.0001882	-37.02	0.000	-.0073349	-.0065972
Gender	-.0254468	.0061482	-4.14	0.000	-.0374984	-.0133952
Secondary	.0720114	.007501	9.60	0.000	.0573081	.0867147
Tertiary	.198597	.011306	17.57	0.000	.1764353	.2207588
Employment	.0276907	.0063838	4.34	0.000	.0151773	.0402041
Second20	.0227114	.009306	2.44	0.015	.0044699	.0409528
Middle20	.0597245	.0092899	6.43	0.000	.0415147	.0779343
Fourth20	.0927008	.0092592	10.01	0.000	.0745511	.1108504
Richest20	.1317881	.0093907	14.03	0.000	.1133806	.1501956
Powerdistance index	0	(omitted)				
Individualism	.0042886	.005162	8.31	0.000	.0032767	.0053004
Masculinity	0	(omitted)				
Uncertainty avoidance	-.0038616	.0002061	-18.74	0.000	-.0042656	-.0034577
Long-term orientation	0	(omitted)				
Indulgence	-.013404	.0009443	-14.19	0.000	-.015255	-.011553
Has an account atfin.ins	.1466091	.0071126	20.61	0.000	.1326672	.160551
GDP percapita	.0000495	1.52e-06	32.62	0.000	.000466	.0000525
_CONS	.2731722	.0159773	17.10	0.000	.2418538	.3044905

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 e-commerce 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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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.

Table13: Summary of results

	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.	Not supported
H11	Online purchase is prevalent among restraint SCO member states.	Supported

VI. 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-to-face interviews with SCO populations from China, India, Kazakhstan, Pakistan and Russian Federation. For demographic characteristics including power distance, individualism, masculinity, uncertainty avoidance, long-term 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 e-commerce field, the main part of the current e-commerce 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.

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Uncertainty of the Post-Covid Future: How will Humanity Solve this Puzzle?

By Andrey I. Pilipenko, Olga I. Pilipenko & Zoya A. Pilipenko

Abstract- The post-pandemic future is "shrouded" in complete uncertainty. Humanity is faced with COVID-19 in a situation where many economic and social problems have already accumulated, approaches to solving which have not been developed. At the same time, technological progress has brought humanity closer to fantastic prospects associated with the implementation of the achievements of the technological revolution 4.0. However, in this context, there has emerged and is growing the lack of professionals with relevant skills and competencies. In addition, the waves of the coronavirus pandemic, the emergence of more and more aggressive and deadly strains of it have dispelled the myth of humanity's ability to subordinate the eco-natural system to its interests without harming it. In a pandemic, the very organization of human society was under the threat of destabilization due to the violation of the dialectic of the relationship between individuals and society, citizens and the state, etc. The precariat, NEETs, generation Z with their specific preferences and value orientations became the result of a violation of the social integrity of national communities.

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Andrey I. Pilipenko [α], Olga I. Pilipenko [σ] & Zoya A. Pilipenko [ρ]

Abstract- The post-pandemic future is "shrouded" in complete uncertainty. Humanity is faced with COVID-19 in a situation where many economic and social problems have already accumulated, approaches to solving which have not been developed. At the same time, technological progress has brought humanity closer to fantastic prospects associated with the implementation of the achievements of the technological revolution 4.0. However, in this context, there has emerged and is growing the lack of professionals with relevant skills and competencies. In addition, the waves of the coronavirus pandemic, the emergence of more and more aggressive and deadly strains of it have dispelled the myth of humanity's ability to subordinate the eco-natural system to its interests without harming it. In a pandemic, the very organization of human society was under the threat of destabilization due to the violation of the dialectic of the relationship between individuals and society, citizens and the state, etc. The precariat, NEETs, generation Z with their specific preferences and value orientations became the result of a violation of the social integrity of national communities. Naturally, it is difficult to solve the puzzle of uncertain post-covid future without understanding the specifics of modern reality. This publication is the authors' attempt to structure modern problems in their dialectical connection and subordination on the basis of dialectical logic within the framework of a systematic approach. It makes possible to understand the patterns of structuring future reality, to determine the role of a human in the systemic formation of a new economy and society and the creation of a new technological base for them. This will make it possible to understand the patterns of structuring the future reality, to determine the role of a human in the systems' organization of a new economy and society and to create a new technological base for them. This is the only way to minimize the uncertainty of the post-coronavirus future.

I. Introduction

According to the World Health Organization as of July 14 2021, the number of COVID-19 infected people on the planet reached 188.3 million, of which the number of deaths was estimated at 4.06 million. A real shock for the countries all over the world became the phenomenally rapid spread of coronavirus across the Globe and the failure of nation states to instantly identify and isolate patient zero and prevent the pandemic to cross national borders. A year after the start of the COVID-19 pandemic, it became clear that new strains of coronavirus are infecting people even faster and the number of deaths is growing. In these conditions, in addition to the priority task of preventing a humanitarian catastrophe today, the importance of the problem of minimizing the absolute uncertainty of post-covid reality in the future has increased. Thus, over the millennia since the separation of mankind from the natural environment, the humans managed to make a tremendous leap in technological progress, in labor productivity, in the generation of various forms of organizing economic activity and social interaction. On this basis, people became convinced that they are able to completely subordinate nature to their goals. However, the COVID-19 pandemic in the blink of an eye shattered this illusion of mankind, demonstrating its absolute vulnerability to natural disasters such as deadly viruses, large-scale fires, powerful floods, etc.

As a result, in the 2020s, humanity is forced to repeat the experience of technological progress, the acceleration of which was due to the transition from empirical developments of practitioners to a theoretical understanding of the laws of technological change. However, the difference between the mechanisms of system formation in technology, on the one hand, and in the economy and society, (Romer, 1988; Arthur, 1999, 2014; Nordhaus, 1994) on the other, is that economic and social systems are not just dialectically interconnected, and subordinate to each other, but each of them is capable of self-movement. (Pilipenko, et al., 2021b; Chardin, 1955; North, 1981, 1997, 2003). At the same time, a person or, more precisely, individuals, who, in turn, are complex self-sufficient systems capable of self-organization and self-development, acts as a mediator in this dialectical connection between economic and social integrities. At the same time, the pandemic made it obvious that the dialectic of the educational and social component of the self-organization of a modern personality turned out to be destroyed. This manifested itself both in the crisis of modern education and in the societal crisis as a result of the pandemic, which further exacerbated the problem of uncertainty about the future reality (Baker, et al., 2015). Many such negative phenomena are investigated in the publications of the following modern authors: Jonathan Haskel and Stian Westlake (2017); Eric Lonergan, and Mark Blyth (2020); experts of McKinsey Global Institute (2021); Martin Sandbu (2020); Branko Milanovic (2019); etc.

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Thus, the COVID-19 pandemic has become the X hour for humanity, which must say goodbye to its "childhood" and enter the uncertain future of its "youth". And the latter will be determined by how quickly the human community will be able to solve the puzzle of the accumulated fundamental problems, to understand their interconnection and subordination, and to construct its own vision of post-covid reality. In fact, we are talking about a radical rethinking of theoretical generalizations of representatives of specialized branches of knowledge and about the creation of the latest methodological platform. On its basis, it will be possible to understand the patterns of self-movement of systemic formations created by people in the economy and society, to reveal the dialectics of their self-organization in a static state and self-development at the stage of dynamic changes. The complexity of their modeling is aggravated by the fact that eventually a certain virtual "universe" should emerge, the central element of which should be the person himself. Moreover, the latter is formed as a self-sufficient system that mediates all the processes of system formation in the economy and society, harmonizes their dialectical transformations, coordinates interactions and mediates their dialectical "leaps".

This article is focused on demonstrating the effectiveness of dialectical logic and systemic ideas about the patterns of formation and endless self-movement of human-created systemic integrities in the economy and society, about their interactions, subordination and mutual influence. Their center of rotation is a person (more precisely, an individual), who is himself a self-sufficient systemic integrity, capable of both self-organization and self-development. Moreover, the socialization of individuals into the economic system and into society mediates the interaction of the latter with each other, predetermining both their dialectical unity and social "order", and their opposites and accompanying "fault lines" (Rajan, 2010).

In other words, the COVID-19 pandemic has exposed numerous problems of the human community: inefficiency of the state, loss of livelihoods and poverty of a large mass of households as a result of pandemic, growing unemployment and an increasing mismatch between the supply and demand of a labor force with skills and competencies that meet the requirements of the technological revolution 4.0, the emergence of the precariat, NEETs, the lost young generation as a result of the pandemic, a shrinking middle class and an increase in the number of billionaires, social inequality, corruption in government institutions, the inability of national healthcare systems to effectively protect their citizens from unknown infections, destruction of the eco-natural system, etc. In fact, all the above is only a form of manifestation of the lack of understanding of the laws of self-organization and self-development of human-made systems and, therefore, of violation of the dialectical principles of their self-movement and interaction. And the latter, in turn, are predetermined by the failure to understand the phenomenon of a human, which remains a "thing-in- itself" according to I. Kant (1781).

In this context, the key area of national states' activities, faced with the fundamental problem of an uncertain post-covid future, is to provide conditions for the self-organization of the human, subject to the dialectics of the educational and social components of this process, as well as for his self-development as an intellectually autonomous person. Only such an approach to understanding the role of a person in the context of the dialectics of interaction of the systems created by him in the economy and society makes it possible to determine his paramount importance as a moderator of all processes of system formation in the future post-covid reality.

All of the above predetermines the following logic for the presentation of the article material. In the methodological section, the authors substantiate a new theoretical platform for studying the problems of the formation of post-covid reality using dialectical logic and a systematic approach. The first paragraph of the article demonstrates the possibilities of this theoretical approach when describing the dialectics of self-movement of human-created systemic integrities, while treating the dialectic pair of phenomena of self-organization and self-development of systemic integrity in the economy and society, who have reached the point of no return under COVID-19 conditions and are ready for dialectical jumping from static to dynamic. The second paragraph is devoted to substantiating the role of a person as a complex systemic integrity, capable of both self-organization and self-development, and harmonizing the processes of self-movement of the economy, society and technology. At the same time, the main conclusions are based on the fact that all the problems of the current reality and of the construction of the post-COVID-19 future will be solved, in fact, in the sphere of human self-movement. This is due to the fact that without a person there is no economy, no society, no technology. And all the contradictions in these systemic organizations are due to unresolved problems in the self-organization and self-development of the person himself. With this approach, the economic and societal crises caused by the pandemic are a form of manifestation of the essential problem associated with the violation of dialectics in the self-organization and self-development of the human personality. In this regard, the third paragraph is logical, which provides an in-depth understanding of the processes of system formation in the context of the generation of an intellectually autonomous personality. Post-covid reality will be structured by such individuals who are able to mediate system formation both in the post-pandemic economy and in the future society, as well as to form a new technological base for them. Empirical evidence of this study is based on modeling the specifics of the knowledge component of the student's self-organization process. As a result, the student must acquire the ability to independently overcome psychological and cognitive barriers in learning. In addition, using the example of Russia, the authors structured statistical data illustrating the mechanism of socialization of students in the process of their self-organization and calculated the economic effect. In the results and discussion, the authors describe the second component of the dialectic of personality self-organization - its socialization, highlighting the skills group from those proposed by the World Economic Forum (2015) and the World Bank (2018) experts, which characterize it. In fact, having learned to overcome all possible barriers in the process of education and socialization at the stage of his self-organization, an individual is able to achieve a state of success not only in professional activity, but also in organizing his life in society. These qualities are typical for intellectually autonomous individuals capable of unlimited self-development. A critical mass of such persons, capable of creativity in the profession and in life, happy in the society due to the coincidence of their individual values and socially accepted norms, will become the main participants of the processes of system formation of post-pandemic reality.

II. Methodology

In order to establish the connection and interdependence of the fundamental problems that became apparent thanks to the COVID-19 pandemic, the authors had to form their own logic of theoretical research, which allowed them to ultimately solve the puzzle of disparate, incoherent parts of human-created systemic integrities. First of all, the authors have adopted the dialectical method of research, which allowed the classics (Hegel, 1892; Marx, and Engels, 1955-1974) to obtain important results in their scientific work. The choice turned out to be successful, since the authors got a completely unique chance to substantiate static reversible changes in system integrity at the stage of their self-organization, and to link the dynamics of systems with irreversible cardinal (fundamental) transformations of their elements and the formation of new structures. As a result, it became possible to understand the predetermination of changes in systems at the stage of their self-organization under the influence of the dialectical laws of unity and struggle of opposites and the one of the transition of quantitative changes into qualitative ones, , and at the stage of self-development – of the law of double negation.

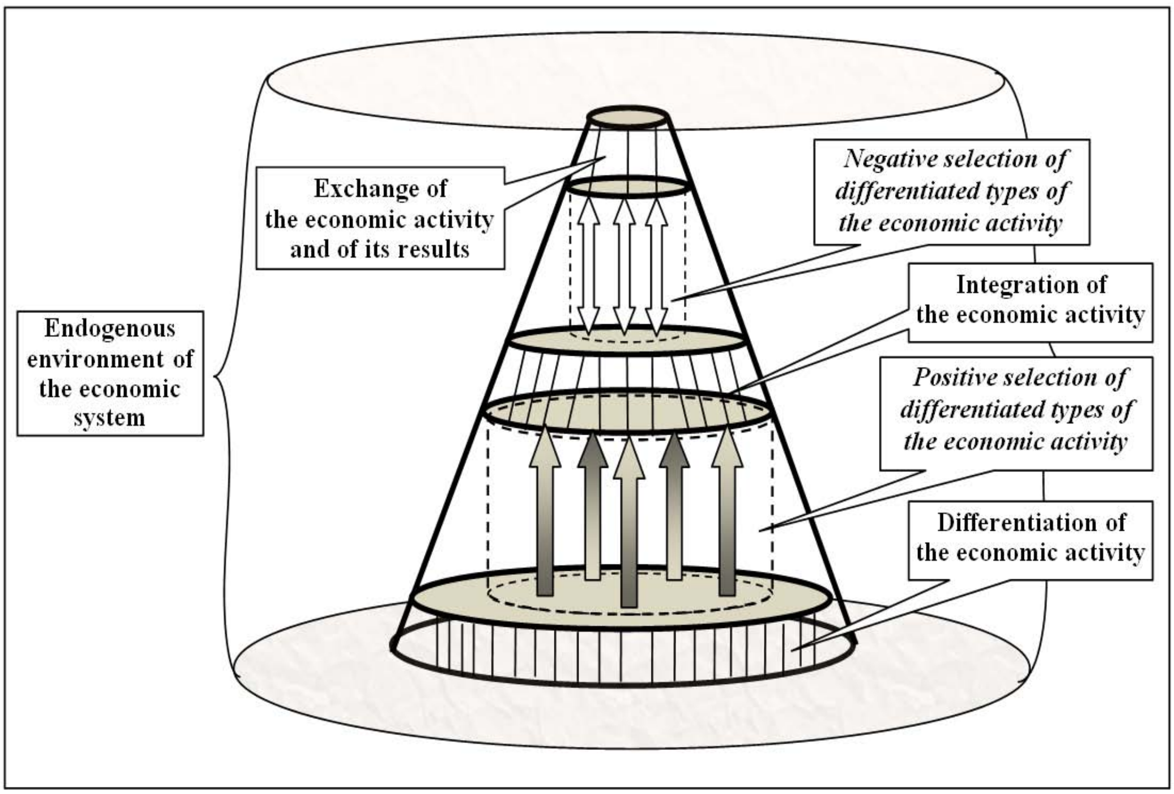
Deepening into the problem of self-movement of human-made systemic integrities, the authors developed a hypothesis about dialectical connection and conditioning not only of elements, a system and its structure, but also of all systems among themselves. To prove it, there were involved philosophical principles of knowledge (B.M. Kedrov, 1963; A.P. Sheptulin, 1957; A.A. Zinoviev, 1960) and the logic of materialist dialectics, which is associated with the names of prominent representatives of the German philosophy - Immanuel Kant (1781); Friedrich Wilhelm Joseph von Schelling (1993), and Georg Wilhelm Friedrich Hegel (1892, 1967) as well as the findings of such brilliant thinkers as К. Marx (1995); Vladimir I. Vernadsky (1967), Ludwig Heinrich Edler von Mises (1998), Friedrich August von Hayek (1991), Fernand Braudel (1981), and etc. As a result, the use of dialectical logic in the study of the economy and society made it possible to discover in them the identity of the processes of self-organization and self-development, predetermined by the above mentioned dialectical laws (Pilipenko, et al., 2021a, 2021b).

From a philosophical point of view, the repetition of certain phenomena makes it possible to assume that they are associated with objectively operating mechanisms within the framework of systemic integrity. To prove the validity of these conclusions and to identify the essence and forms of systemic integrities, it became necessary to take into account the provisions substantiated by the creators and developers of such theoretical concepts as general systems theory (H. Hacken, 1977), synergetics (Ludwig von Bertalanffy, 1968), tectology (A.A. Bogdanov, 1934), the catastrophe theory (V.I. Arnold, 1975, 1979; J. Guckenheimer, 1973; E.C. Zeeman, 1977; R. Thom, 1969; 1974; and etc.), theory of large cycles of economic conjuncture (N.D. Kondratiev, 1984), as well as the modern theory of complexity economics (W. Brian Arthur, 1999; Arthur, et al., 1997; Anderson, et al., 1988; Hausmann, et al., 1996), etc.

The search for an integrating principle, dialectically mediating the interaction of economic and social systems, led the authors to the idea that it is a person who is the centre around which the human-created systemic organizations revolve in the economy, society, and technology. The approach to man as a self-sufficient system made it possible to dialectically link education and socialization as a specific feature of the individual's self-organization. As for the phenomenon of intellectually autonomous personality, it is associated with the beginning of human self-development. On this difficult path, the works of outstanding humanist thinkers of the present and the past became a huge help, which allowed the authors to build the general outlines of the model of human-created system organizations that unite differentiated types of economic activity and separate individuals in society. It is about V.I. Vernadsky (1960, 2018); L.N. Gumilev (2012a; Gumilev, 2012b), Gary Stanley Becker, (1985, 1993); Theodore W. Schultz (1960); Jacob Mincer, and Solomon Polachek (1995). To understand the deep psychological patterns of changes in the essence of education, the authors were forced to delve into the theoretical aspects of human psychology and the psychology of education [Vygotsky, L.S. (1960); Elkonin, D.B. (1989); Davydov, V.V. (1996); Slobodchicov, et al., (1995); Slobodchicov, et al., (2000); Slobodchicov, et al., (2013)]. As a result the authors concluded that technological and socio-economic transformations in an uncertain post-covid future are undoubtedly fundamental, which can only be achieved by intellectually autonomous self-developing personalities. And it is these constructions that will become the foundation of the human-centric socio-economic systems in the future. Dialectical application of the tectological principles of A.A. Bogdanov (1934) to the organization of human-created systems in the economy, and society led the authors to the opportunity to see the simple in the complex and in the very complex (Pilipenko, et al., 2021b). This confirms the truth that the great A. Einstein expressed with the following words: “For, in reality, things happen in exactly the opposite way. It is only the theory which decides what can be observed”!

Dialectics of self-organization and self-development of human-created systemic integrities

A systematic approach to the interpretation of organizations of economic activity and social communities created by humans made it possible to identify in them all the components typical of self-sufficient systems. It is about the elements, the system as integrity and structural connections of the elements of the system. The processes of system formation are based on A.A. Bogdanov tectological principles of ‘unification – separation’ (‘cooperation – differentiation’) of objects, subjects and processes. The specificity of these opposite phenomena and processes lies in the fact that they are typical dialectically related pairs of phenomena, in fact, with which the creation of systems by a person begins, which acquire the ability to both self-organization and self-development. Dialectical logic and systems approach allowed the authors to offer a model idea of the processes of systemic formation in human activity (Fig.1).



Source: Pilipenko, et al., 2021b

Figure 1: Model representation of the interaction of differentiation and integration as forms of economic activities’ organization and of their essence, represented by the exchange of economic activity and of its results

A.A. Bogdanov compared the processes of differentiation and integration with a universal regulatory mechanism in all spheres of human activity. From his point of view, positive selection (the differentiation of human activity), "by complicating the forms, increases the heterogeneity of being, delivers material for it that is ever increasing". As for the negative selection (its integration), it, "simplifying this material, eliminating from it all fragile, discordant, contradictory, introducing homogeneity and consistency in its connections, orders the latter. Complementing each other, both processes spontaneously organize the world" (Bogdanov, 1934).

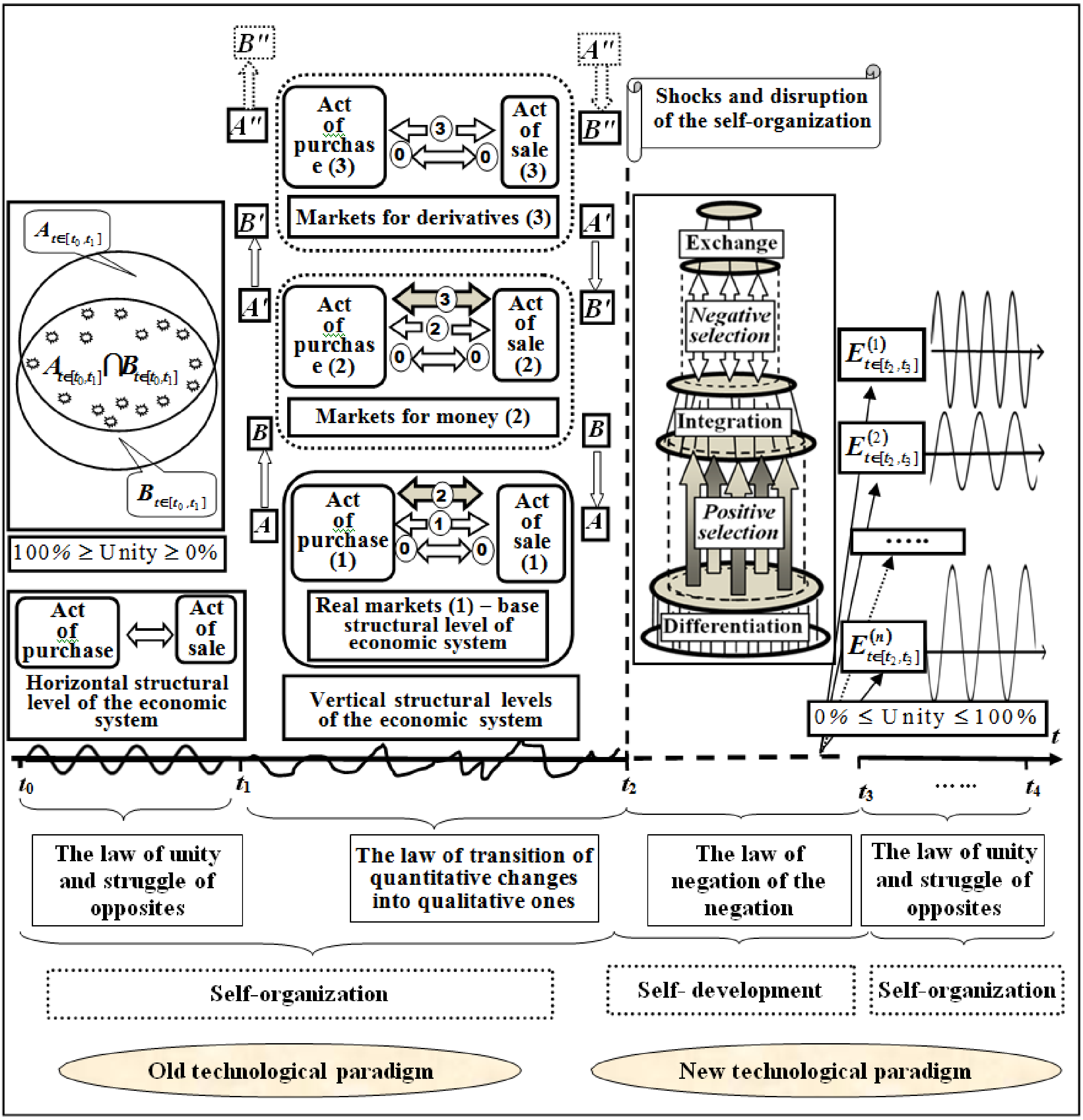
From a theoretical point of view, the narrow "neck" of exchange (Fig. 1), which arose as a result of negative selection, represents the emergence of a systemic integrity created by people with the help of dialectically connected economic or any other relations. Dialectical logic made it possible to link the exchange of the results of economic activity between dialectical pairs of participants with a structure-forming principle or with a system formation. From this moment, the arisen system integrity acquires the ability both for self-organization and for self-development. In other words, human organizations as systemic entities become self-sufficient due to the fact that dialectically related elements are mediated by structural connections that are constantly renewed, stable and unchanged. From a philosophical point of view, the structure of the system embodies "the principle, method, law of the connection of elements within the systemic whole" (Sheptulin, 1975, 1978). In other words, the dialectical laws are implemented through structural connections of exchange participants, regulating their changes.

Further research of systemic integrities in the sphere of human activity led the authors to the conclusion that the change in the structure of the system under the influence of the dialectical laws of its self-movement makes it possible to distinguish two qualitatively different states of it. In the process of self-organization, the system becomes more complex by generating a hierarchy of structural levels that are vertically linked by cause-and-effect relationships (Pilipenko, 2020). While the higher levels in the structural hierarchy solve the problems of lower structural levels of the system, the latter remains stable, although its fragility as the integrity increases. The specificity of the self-organization of the system due to the generation of new levels by the structure is associated with the reproduction of direct and feedback connections by them, i.e. the system becomes more complex due to additional structural levels (Arthur, 2013), repeating and not changing qualitatively. It is about the stage of self-organization, a system that is in a static state, changing only organizationally, becoming more complex through the generation of new dialectically interacting structural links (levels). At the same time, the dialectical law of unity and struggle of opposites operates at the horizontal level of the structure, and the generation of new structural levels occurs under the influence of the law of the transition of quantitative changes into qualitative changes (Fig. 2, time intervals t0 – t1 and t1 – t2).

However, everything has its limits. This is also true for the self-organization of the system in its static state. As for its transformation into a dynamic system, this dialectical leap is realized through the dialectical negation of its own static state. It becomes possible because the system in statics and the system in dynamics represent two forms of its self-movement which are dialectically interconnected: the dynamics of the system cannot be without statics, and statics is intended to form conditions for its dynamic state. This is because the structural complication of a static system objectively leads to an increase in its fragility (Taleb, 2007, 2012). The shock transformation of the hierarchical structure is associated with a change in the cause-and-effect relationships of structural levels from upwards to downwards causation process (Hodgson, 2002). Then, instead of strengthening the integrity of the system, it is destroyed. This is the result of the operation of the law of negation of negation, which consistently destroys both the structural levels of the effect and the structural levels of the causes that generated them in the previous static system. This is the limit of a self-organizing system. With the destruction of the structure, the point of no return is left behind, the direct and reverse structural interdependencies have been destroyed, and the system acquires the qualities of a dynamic one. The content of such a state of the system is due to the fact that only dialectically complex elements remain from the previous system, which will rebuild structural connections and dialectical interdependencies (Fig. 2, time interval t2 – t3). Actually, this theoretical fragment describes the essence of the future post-covid reality, the specificity of which today is complete uncertainty.

According to G.W.F. Hegel (1892, 1967) self-organization and self-development of systems could be treated as characteristics of the objective world. They are inherent in all systemic integrities. With this approach, self-development should be understood as endless changes in the system as a whole, including certain stages (of self-organization) of structural complication of an unchanging system. In other words, it is only about changes in the "left to itself" systemic integrity in the economy, society or technology.

The complexity of the above construction is due to the fact that it deals with such dialectically interrelated categories as static economics and dynamic one, as well as self-organization of static economy and self-development of dynamic economy. This list should be continued by including two dialectical laws (of unity and struggle of opposites and of transition of quantitative changes into qualitative ones), which are related to each other as dialectical pairs of phenomena. Likewise, the dialectic of the law of double negation is manifested in its unity with the laws operating in a self-organizing system and in their complete negation in a dynamic system. As a result, the economy appears as the integrity in its two forms of manifestation - in statics and in dynamics.



Source: Pilipenko, et al., 2021

Figure 2: General model of interaction of self-organization and of self-development mechanisms of economic systems and of implementation of dialectical laws

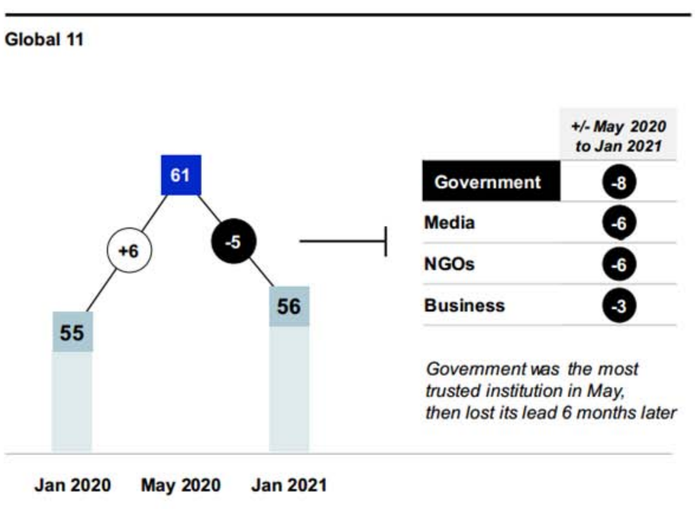
The theoretical structure formed above is complicated due to the fact that it must additionally take into account not only the intersystem connections of the economic and social systems, but also the technological foundation on which they are formed. Fig. 2 integrates the technological base when characterizing economic system in statics and in dynamics. If the structural basis of reversible phenomena in technology has not exhausted its potential, then economic systems subordinate to it and cannot count on the implementation of self-development. In fact, it is about the fact that interconnected dialectically systems have not yet exhausted the potential of structural complication in the process of self-organization. Only upon reaching the threshold of complexity by technological systems, all the systemic integrities in the economy and other spheres predetermined by them, can realize their own self-development. In any case the process of self-movement of economic systems in connection with self-organization and self-development should be interpreted as the dialectically interrelated processes, which represent the unity of discontinuous and continuous, relative rest and constant change (Fig. 2).

So, the COVID-19 pandemic immediately revealed problems in understanding the patterns of change in each of the human-created systems in the economy, society and technology, not to mention their dialectical interaction at different stages of systems complication. As a result, all crises that have manifested themselves as a result of the coronavirus pandemic must be interpreted in the context of the dialectical laws of self-movement of all the systems mentioned above in the economy, society and technology.

At the same time, it should be emphasized that for each country the limiting states of self-organizing systems will have its own specifics due to the peculiarities of the economy, society and technological basis. Therefore, even if their states coincide in the context of reaching the limits of self-organization, a dialectical leap or discontinuity in the movement of system integrity will have a huge variety of options for different countries and national communities It is possible to concretize these options in modern reality only conditionally, and this largely predetermines the uncertainty of the future post-covid reality. In the authors' model (Fig. 2), the alternative of self-development of dynamic systems is conditionally reduced to three scenarios – $E^{(1)}$, $E^{(2)}$,…, $E^{(n)}$, in the time intervals $t_2 - t_3$ and $t_3 - t_4$.

The above theoretical construction allows the authors to draw certain conclusions. First, the COVID-19 pandemic has exposed the ultimate state of static economies in the most developed countries. Moreover, other countries that are inferior to them in economic parameters can see their more or less distant future by their example. The authors associate the exhaustion of the self-development potential of economic systems with a steady downward trend in the growth rate of global GDP in recent decades, especially in the group of developed countries of the world (Summers, 2020; Summers, 2014).

Second, the phenomenon of a fall or minimization of citizens' confidence in their state testifies to the limiting state of national societies (Fig. 3).



Government	+/- Jan 2020 to May 2020	+/- May 2020 to Jan 2021
S. Korea	+16	-17
UK	+24	-15
China	+5	-13
Mexico	+12	-12
Canada	+20	-11
India	+6	-8
U.S.	+9	-6
Germany	+19	-5
Japan	-5	-1
Saudi Arabia	+5	-1
France	+13	+2

Notes: The Trust Index is the average present trust in NGOs, business, government and media, included 11 countries in the 2020 Trust Barometer Spring Update.

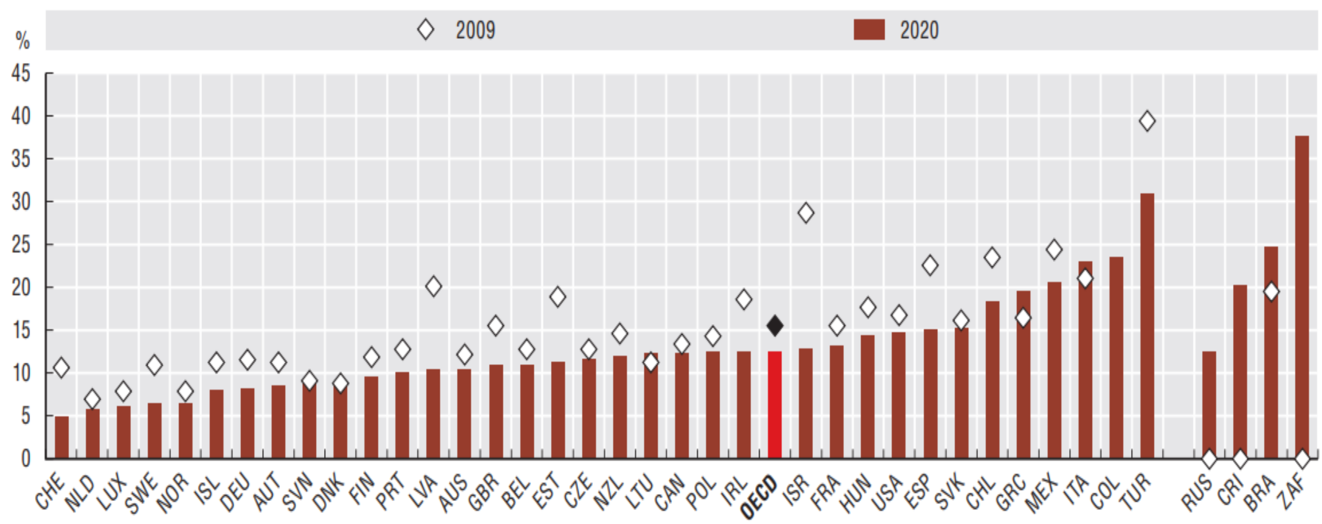
Source: Edelman (2021). Edelman Trust Barometer 2021: Global Report. https://www.edelman.com/sites/g/files/aatuss191/files/2021-01/2021-edelman-trust-barometer.pdf.

Figure 3: Dynamics of trust in government, media, NGOs, business in 2020

According to Fig. 3, the Trust Index as the average present trust in NGOs, business, government and media of 11 countries was 55% in January 2020 and grew to 61% by May 2020. But already in January 2021 the Trust Index decreased to 56%. In other words, for 6 months - from May 2020 to January 2020, the Trust Index fell by 5%. Moreover spring trust bubble burst and the biggest loss became for government (-8% in January 2021). Really government was the most trusted institution in May 2020, and 6 months later it lost its lead. The greatest loss of confidence was characteristic of such states as South Korea (-17), UK (-15), China (-13), U.S. (-6), Germany (-5), Japan (-1) (Edelman, 2021). And this, undoubtedly, turns into the main obstacle to an effective strategy of the state aimed at the timely re-opening of the economy. Against this backdrop, rising unemployment and economic lockdown have become extremely expensive public strategy in the fighting COVID-19 pandemic. As a result, all these costs should be attributed to the losses of society due to the fact that the state was unable to build a public healthcare system capable of functioning in anticipation of the huge human and economic losses caused by COVID-19.

In fact, they can be interpreted as the price of the fallacy of all the previous practice of national governments that provided rapid growth and optimizing economic output at the expense of underestimating the priority of creating a sustainable public health system. Such misunderstanding of the subordination of the goals of ensuring the health and well-being of citizens and economic growth rates at any cost largely predetermined the transcendental inefficiency of the state in the context of the COVID-19 pandemic, as well as of the societal crisis. In practice, this turned into a catastrophic collapse of the global economy and the destruction of the societal integrity of national communities.

In the context of the coronavirus pandemic, distrust of the state takes the form of citizens deliberately violating the emergency regimes imposed by states to fight infection; unwillingness to get vaccinated against coronavirus, etc. However, the most destructive for a self-developing society is the phenomenon of the formation of a social stratum among young people, which is structured as a new social class called "precariat" (Standing, 2011). And in the last decade, an extreme form of its manifestation has arisen in a new specific social community – NEET (Not in Employment, Education or Training) (Fig. 4). If the share of these young citizens (from 15 to 29 years old) reaches a quarter of all youth (as in Italy), then the integrity of society has every reason for destruction, since they do not have a permanent place of study or work, they shy away from professional training (IPSOS, 2021). In other words, these young people ignore society and try to minimize their contacts with it.



Source: OECD (2021), Government at a Glance 2021, OECD Publishing, Paris, https://doi.org/10.1787/1c25 8f55-en

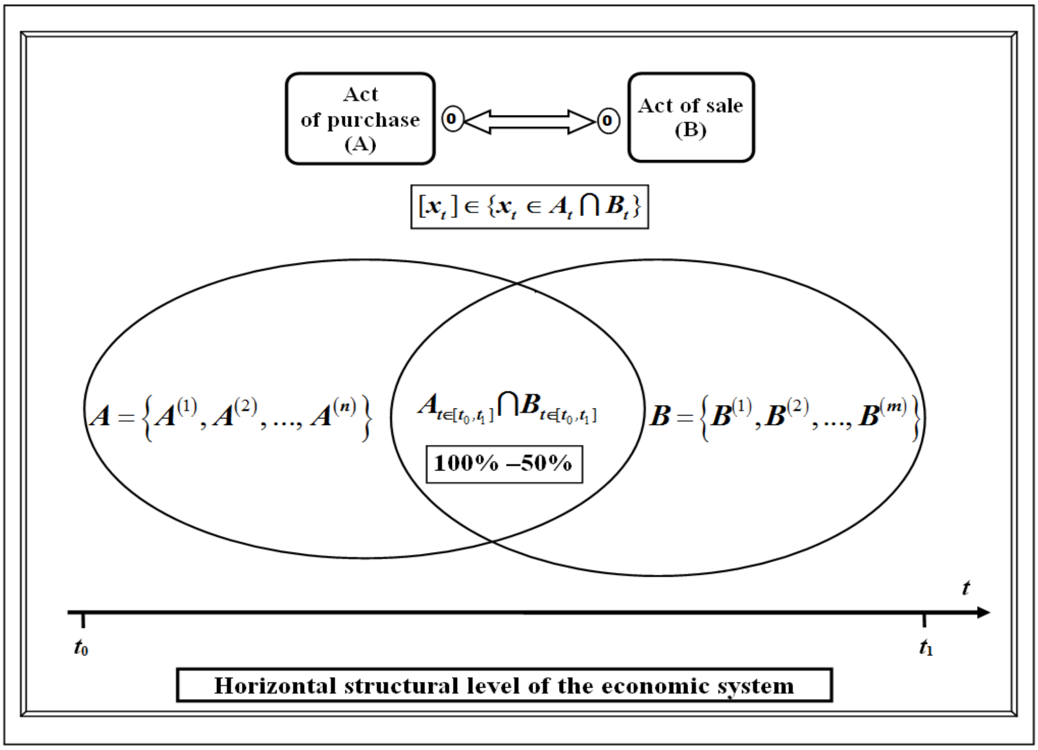
Figure 4: Percentage of young people (aged 15-29) years not in education, employment or training (2009 and 2020)

Third, the COVID-19 pandemic has exposed such a paradoxical situation as the growing surplus of the labor force of obsolete qualifications and the catastrophic widening of the gap between the demand for workers meeting the requirements of the technological revolution 4.0 and their supply. In a pandemic, this gap threatens with missed opportunities for countries of the world, whose human capital, in terms of education parameters, is not ready to form a new technological base for the dynamic economy and society ex post pandemic. In other words, the essential problem that predetermines all crises that have manifested themselves as a result of the COVID-19 pandemic is associated with a person who played a subordinate role in self-organizing systems before the pandemic, but without whom it is impossible to realize their dialectical leap into the future post-covid reality.

Socialization of humans and synchronization of self-movement processes in the economy, society and technology

The authors assigned such a significant place to the socialization of citizens in modern self-organizing systems since their study of the peculiarities of the implementation of dialectical laws in the economy (Pilipenko, et al., 2021b) made it possible to single out the object's, process and subject's components of system formation. The object component is represented by material and non-material objects of market exchange, and the process component is manifested in the self-organization and self-development of systemic integrities. But the subjective component turns out to be the most complex, unpredictable and most important in mediating the interaction of all human-created system integrities – in the economy, society and technology. In fact, the subjective component mediates the coincidence / non-coincidence of the value ideas of individuals with socially accepted values that are institutionalized by the state.

The authors used the model of dynamical sets are self-affiliated within the framework of the theory of sets with self-affiliation (Mirimanoff, 1917; Chechulin, 2012). If the dynamic sets A and B represent the values of the individual and the values (social norms) of society, then their intersection allows us to describe the mechanism of strengthening / destroying the system integrity both in the economy and in society (Fig. 4).



Source: The authors' development

Figure 4: A model representation of the interaction of individuals and systemic wholes on the example of the economy, taking into account the segments of the intersection of the value concepts of subjects and social norms that dominate in society

In this example, the change in the segments of the intersection of dynamic sets illustrates how the structural connections of dialectically related subjects and systemic integrities change. As long as the subjects are satisfied with the "social behavioural norms" in economic and social systems, their interests vary from 100% coincidence to 50% (Fig. 4). Under this condition, the stability of the self-organizing systems is strengthened. It is described with the help of interests of sellers and buyers in the economic system. In Fig. 4 such a state is described by a white arrow with parameters 0. Otherwise, the divergence of interests of subjects and society, the integrity of systemic formations becomes more and more fragile. As a result, the authors linked the system formation in the economy and society with the subjectivization of their structural ties. This means that the value parameters of individuals and their agreement / disagreement with society as a whole play a cardinal role in strengthening the integrity of self-organizing systems and in their destruction. Moreover dialectical logic forced the authors to consider a person as a polysyllabic phenomenon, since by participating in market transactions, a person realizes the values, norms of behavior and principles of attitude towards his partners that he acquired in society. It is in this context that the subjective component of the processes of self-movement of systemic integrity in the economy, society and technology performs the function of synchronization of the processes of their self-movement. Actually the same idea was brilliantly formulated by E. Durkheim (1895) in the sense that Homo Sapiens is always and to the same extent also Homo Socius.

As a result, the authors made the assumption that the societal and economic crises accelerated by the coronavirus pandemic have causes being matured for the long period and led to a violation of the coordination (synchronization) of changes in the economic and social systems due to inadequate socialization of subjects. Thus, it is about an essential fundamental problem of our time - inadequate socialization of subjects within the framework of the economic and social systems, which destroys the dialectic of their interaction.

If this is a legitimate conclusion, then the subject as the center of self-movement of systemic integrities in the economy and society should also be dialectically interpreted as a self-organizing and self-developing system. Moreover the processes of self-organization and self-development of a person predetermine the mechanism of his self-creation, when the goals, intentions and inclinations of individuals influence on the structural ties of the society as well as of the economic system. At the same time, social institutions also have a reverse effect on individuals, adjusting their goals and preferences. According to A. Giddens, a structure is "recursively organized rules and resources" (Giddens, 1982. P. 35). Commenting on the theory of A. Giddens, I. Craib argued that structure and individual activity are thought of as "two sides of the same coin" (Craib, 1992; Hodgson, 1988). According to these scientists, considering social practices it becomes possible to see actors and their actions or it is about the structures they create". In other words, the constant interactions of individuals form the structure of society, which structures the behavior of individuals through social institutions. The quality of the integrity of the society in which individuals are socialized influences on its stability.

The situation was aggravated by the fact that on the eve of the COVID-19 pandemic i.e. at the very end of the period of self-organization of economic systems the disrupted dialectic of economics and society manifested itself in numerous social problems. It is about catastrophic polarization of the population in terms of income and wealth, a growing number of working poor, a shrinking middle class, social inequality in access to education and the health care system, gender inequality, etc. In such conditions, the socialization of subjects definitely ceases to serve as a mechanism for restoring the dialectic of the relationship between the economy and society at the national level.

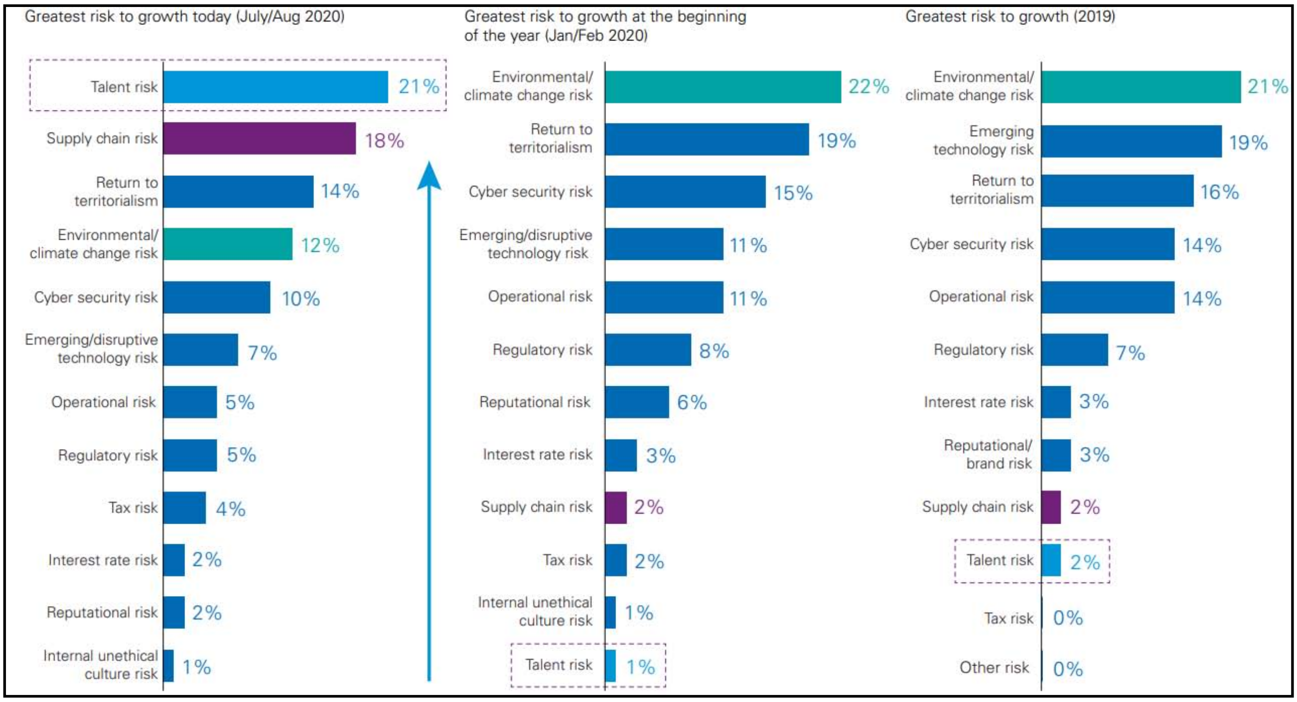
Post-covid reality and the dialectics of self-organization of a human: between the Scylla of education and the Charybdis of socialization

Summing up all of the above, it is necessary to highlight the main essential problem of our time, the solution of which should be based on the paramount importance of the subjects with the qualities of intellectual autonomousness. A critical mass of such talented individuals is able to form a new technological base for a self-developing economy and society, restoring, first of all, the dialectical relationships between them. However, the complexity of the formation of such a subject is associated not only with the fact that it must be adequately socialized, embodying the goals and objectives of social progress. This person must first of all be self-organized. And this means the optimal combination (dialectic) of adequate socialization and high-quality education. In other words, education and socialization are dialectically related mechanisms of self-organization of the individuals. Only the optimization of these processes will allow a person to make a dialectical leap towards self-development as an intellectually autonomous person. Only with such a personality is the post-covid future associated.

On the eve of the coronavirus pandemic, the quality of socialization of people left much to be desired, but with education the situation was even more deplorable. According to the World Bank (World Bank, 2020) the learning crisis due to the COVID-19 pandemic manifests itself in the following: (1) 258 million children and youth of primary- and secondary-school age are out of school; (2) ... the learning poverty rate in low- and middle-income countries was 53 percent; (3) … the crisis was not equally distributed: the most disadvantaged children and youth had the worst access to schooling, highest dropout rates, and the largest learning deficits; (4) the world was already far off track for meeting Sustainable Development Goal 4 (UNESCO, 2016a, 2016b; UNESCO, UNICEF, the World Bank and OECD, 2021).

And at the same time trends in the Global labor market is as follows: (a) 85% of the global workforce are low- and mid-skilled workers; (b) 13% global population growth by 2030 will be accompanied by professions' changes due to automation and digitalization by 1/3; (c) 27% of new activities will emerge by 2022; (d) the share of Gen Z'ers will be 26% of the total workforce by 2025 (Boston Consulting Group, 2019). In such a situation, education with optimal socialization will play a decisive role in self-organization of a person in order to get the qualities of intellectual autonomy. Only self-developing individual will ensure the formation of a new technological paradigm as the basis for the dynamics of the socio-economic system after COVID-19.

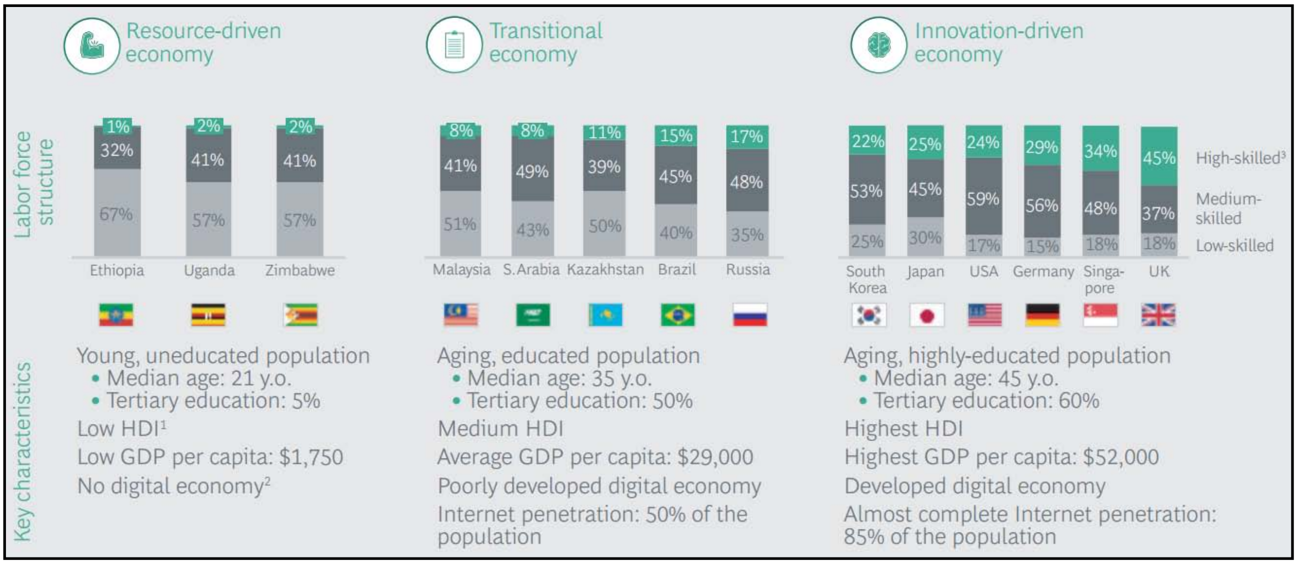
In January 2020, CEOs ranked talent risk behind 11 other risks to growth. However, since the start of the pandemic, talent risk has risen to be named as the most significant threat to their businesses ahead of supply chain, the threat of a return to territorialism and environmental risk (Fig. 5).



Source: KPMG (2020). CEO Outlook COVID-19 Special Edition

Figure 5: CEOs: Changing threats to growth

It is no coincidence that in 2019 BCG experts published the concept of human centricity in connection with the necessity of overcoming the skills mismatch (Boston Consulting Group, 2019). According to the BCG estimates, the growth of the world population from the current 7.6 billion to 8.6 billion by 2030 will be accompanied by changes in the age structure: by 2025, the world's workforce will consist of 26% Generation Z'ers, 37% millennials (Generation Y'ers), 28% Generation X'ers, and 9% baby-boomers. With the rapid development of the newest technological paradigm and the humanitarian catastrophe caused by COVID-19, economic and societal crises, a lost generation due to socio-economic problems and the transition to distance education, a human and the factors that predetermine his self-development in terms of becoming a person with the quality of intellectual autonomousness, become a priority in the construction of reality after COVID-19. Before the coronavirus pandemic the share of highly-skilled employees is highest in countries with high GDP per capita and in an innovative economy – 22% to 45% vs. the world average of 15% (Fig. 6). Already these data indicate that without the self-organization of a person, taking into account the quality of ensuring his health and the level of education, further technical progress, solving socio-demographic problems, and associated cultural transformations will be impossible.



Notes: 1 Human development index, UNDP 2016; 2 E-Intensity digitalization index, BCG; 3 Based on Rasmussen's methodology: High-skilled – "knowledge" labor force that performs analytical, creative tasks under uncertainty. Medium-skilled – "rule" labor force that performs routine cognitive tasks. Low-skilled – "skill" labor force that performs repetitive primarily physical tasks.

Source: Boston Consulting Group (2019). Mission Talent: Mass uniqueness: A global challenge for one billion workers. BCG August

Figure 6: The increasing complexity of the economy is changing the requirements for human capital development

Trends on the eve of COVID-19, characterizing the labor force structure in Fig. 6, are impressive: high-skilled or "knowledge" labor force varies from 22% in innovative-driven economy in South Korea to 45% in the UK. Moreover aging of highly-educated population is 45 (median age) as well as tertiary education is 60%.

Wherein according to the BCG estimates, the skills mismatch in 2019 affects 1.3 billion people, and every year the global economy pays a 6% tax in the form of lost labor productivity (BCG estimate based on OECD data, 2016). And in connection with the COVID-19 pandemic and the accelerated processes of digitalization of the activities of companies, consumers, workers, etc. one can only agree with the opinion of practitioners that without the introduction of human-centric principles of organization in all spheres of human life in the foreseeable future it will be difficult to approach at least 50% of the share of talented employees in teams. That is why the authors insist that the problem of adequate education, necessary for the formation of the qualities of intellectual autonomousness in a graduate, is much more complicated than associating it with a simple accumulation of individual human capital.

This problem is not only of theoretical importance. Today, in the process of exponential growth of the possibilities of the 4th technological revolution, mankind may enter a strip of accelerated progress in all spheres of human life, and may miss this chance as well. The conditions under which a chain reaction of techno-evolution, self-development of the economy and social progress will begin, depends on the state of society, or rather on the position of a person in it. Klaus Schwab (2016) associated this phenomenon with the capability of the technological revolution 4.0 to return the "human capabilities to a man".

Proof of the replacement of tangible assets by intangible ones as drivers of systems formation processes in the economy becomes the following trends. According the McKinsey Global Institute experts, over the past quarter of XX century the scope of intangible assets represented by the knowledge economy with its intellectual property, research, technology, software, etc., has risen inexorably. For this period, in the United States and ten European economies (Austria, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden, and the United Kingdom) the investment into the intangibles has increased by 29 percent. But the COVID 19 pandemic has accelerated greatly this shift toward a dematerialized economy (McKinsey Global Institute, 2021).

Experts are paying more and more attention to the potential of effective mechanisms for the restoration of the economy and society in the post-covid future. And the above data suggests that the structuring of future reality will increasingly be based on skills, knowledge, digital and other technologies, and, in particular, on investments in intangible assets. Thus, the future reality becomes more and more dematerialized (Haskel, et al., 2017). This means that the intellectually autonomous person becomes its main architect. But if conditionally estimating the period of study in the secondary education system at 9-12 years, then the loss of at least one young generation (X, Y, Z) turns into a 30-year period of socio-economic stagnation or regression. So, the waste of time on realizing this truth is the loss of young generations, which could begin to form the general contours of the future world in a dozen years.

III. Results and Discussion

The problem of education is eternal. The experts usually describe it, highlighting the main reasons for the decline in the quality of knowledge, and justifying new and the newest technologies (Romer, 1986; UNESCO, 2016a, 2016b). In 2018 г. in its World Development Report World Bank (World Bank, 2018), and subsequently other analytical institutions (World Bank, 2020; The Economist, 2020) came to the disappointing conclusion that the modern education system is in crisis. Following dialectical logic and considering all of the above, the authors tried to highlight the essence of the problem of the ineffectiveness of the educational process, taking into account more and more advanced methods of presenting material, more and more skillful teaching technologies, etc. In this context, it should be emphasized that the authors first discuss the educational component of the process of self-organization of the individual.

The starting point in the study was the basic methodological principles of teaching, which were brought together by the famous Soviet educator A.A. Pinsky (1978) to the following three: «what to teach», «how to teach» and «how to learn» (Fig. 7). As for the first two – «what to teach», «how to teach», they are quite skillfully implemented in the educational process. As for the 3rd component of the Pinsky triad – «how to learn», then it has turned out to be the weakest element of the modern education system. This is largely due to the fact that the problem of implementing this principle turned out to be the most difficult. Meanwhile, the current state of the education system has made the principle of "how to learn" the most demanded, especially in connection with the massive transition to distance learning during the COVID-19 pandemic.

Indeed, not having taught the student to learn, the teacher makes the first two components – "what to teach" and "how to teach" meaningless. The main reason for the unresolved problem of "how to learn" (or rather "to teach how to learn") lies in the fact that the modern education system simply ignores it. And, meanwhile, from a philosophical point of view, this problem can be presented structurally. If the learner and the teacher are a dialectical pair, then their connection can be represented using the methodological principles of teaching: then the teacher is associated with "how to teach", and the learner is associated with "how to learn". Their dialectical unity is determined by the quality of mastering the subject - "what to teach" (and at the same time "what to learn"). If the degree of the student's mastery of the academic discipline is high, then the difference between "what to teach" (on the part of the teacher) and "what to learn" (on the part of the student) is reduced. Otherwise, this gap increases. It follows that the degree of mismatch between "what to teach" and "what to learn" predetermines the quality of education in all disciplines in general. What underlies the inhibition of the gap between "what to teach" and "what to learn", provided that both the student and the teacher strive to increase the level of mastery of the subject? According to the authors, the psychological and cognitive barriers (PCB) predetermine such a brake (Pilipenko, 1997). PCBs function both in the educational consciousness of students and in the professional consciousness of teachers.

Hence it follows that the main reason for the low level of education lies in the presence of PCBs, or rather, in the fact that they have not been overcome both in the educational consciousness of students and in the professional consciousness of teachers (Pilipenko, at al., 2015). The PCB theory structures the problem of the difficulties of mastering scientific knowledge, typical mistakes and misconceptions in the most general form, serving explanatory, diagnostic and predictive tools. It is aimed at identifying the sources of many students' difficulties in the process of mastering an education subject, at developing general approaches to prevent and overcome the PCBs.

The methodological approaches of the PCB theory in teaching represent the new basis for the creation of innovative educational technologies and aim at generating the intellectually autonomous personalities for post-pandemic reality (Maor, et al., 2017). At the same time, the model of real cognitive consciousness of students could become a new pedagogical tool designed to identify cognitive difficulties, their diagnostics, and to organize their reflection (self-reflection) to students (in the minds of students).

Application of the Pilipenko theory of PCB (Pilipenko, 1997; 2015; 2020) and the generalized model of the real cognitive consciousness of students in education act as a new multifunctional pedagogical tool that allows:1) to carry out a causal diagnosis of students' cognitive difficulties; 2) to organize reflection and self-reflection of the students for the identifying unproductive cognitive strategies; 3) to design innovative educational technologies focused on the development of human capital as an important factor of the formation and development of the knowledge (intangible) economy of the future; 4) to solve effectively the third problem of the Pinsky triad - how to learn or, somewhat broader, how to teach to learn. The psychopedagogical activity organized in this way could significantly increase the effectiveness of studying.

The PCB theory allowed revealing the phenomenon of risk behaviour of students, predetermined with the presence of many irresistible PCBs in their educational consciousness. It is this phenomenon that is manifested in the students' stress, in the formation of their image of complete uncertainty and, naturally, in their weak current educational results, which today are defined as school (educational) failure (Pilipenko, et al., 2021a, 2021b). And, meanwhile, the ability to overcome the PCBs in the learning process is the most important quality of an intellectually autonomous personality. A high level of education allows an individual to adapt to any uncertain environment, identify problems in professional activity, understand the reasons for their occurrence and make a non-trivial decision from the set for their successful solution (The Economist, 2020a; Dam, 2019).

Based on the developments of Russian scientists in the field of human psychology (Slobodchicov, et al., 1995; 2020; 2013), human development psychology (Slobodchicov, et al., 2020] and educational psychology (Slobodchicov, et al., 2013), the authors highlighted the fundamental changes associated with education in the context of the conditions for constructing a human-centric system on the technological basis of the 4th industrial revolution. For the purposes of constructing post-covid reality, education should be aimed at the formation of an intellectually autonomous personality capable of self-development on the basis of the qualities of reflection (self-reflection) and transcending acquired in the educational process (Ananiev, 1977; Ushinsky, 2005; Vygotsky, 1960; Slobodchicov, et al., 2013; Piaget, 2008; Elkonin, 1989). This is preceded by the minimization of the gap between “what to teach” (from the side of the teacher) and “what to learn” (from the side of the student) in the learning process, which indicates the formation of the ability to overcome the PCBs of the participants in the educational process. Then, upon completion of training, individuals capable of self-development objectively need socialization (integration, inclusion into the various structures of society), since it mediates their self-development.

It is necessary to emphasize here that the educational component of personality self-organization is only one side of the dialectical pair of phenomena. Its second side is the socialization of the student. Only the provision of the dialectic of education and socialization of the individual will allow to complete its self-organization and, at the "exit", to obtain an intellectually autonomous personality for capable of self-development. Thus, it is only as a result of education that a person develops dialectically interconnected abilities for reflection and for transcending, which predetermine his socialization. In this process, a self-developing personality structures his inner subjectivity in the process of his self-organization, and objectifies it outwardly by transcending. From a theoretical point of view, a self-developing intellectually autonomous individual is distinguished by the ability to reflect or to realize the boundaries of his own subjectivity and the ability to transcend these boundaries, which opens up new opportunities for the realization of the individual self outside of him (in society). The latter is the content of the process of socialization (inclusion) of the individual into various structures in society.

It is in this sense that the essence of the technological revolution 4.0 is realized under the condition of in-depth knowledge of mankind about what is actually human in a human. The dialectic of the interaction of reflection as a result of learning of an individual and transcending as the basis of his socialization predetermines the essence of the mechanism of human self-development. If a person in the process of education was unable to form the ability to transcend, then this means that in the process of self-reflection he did not learn to overcome the PCBs. As a result, his level of education and ability for self-reflection are insufficient to become an intellectually autonomous person in an uncertain reality, and to fully realize himself through transcending. This makes him helpless in overcoming the diverse PCBs that he may face in an uncertain future.

It is logical to assume in this regard that the crisis of modern education is caused by the growing gap between a person's ability to self-reflection and his ability to transcend, i.e. between the self-organization of his inner subjectivity and self-development as a manifestation of his individuality (self) outside in the form of intellectual autonomousness. This is essentially. In practice, it is about breaking the dialectic of self-organization of a person, which must harmonize the ability to learn (self-education) and to transcend (to socialize himself or to integrate into society). Moreover, the authors insist that the ability to overcome PCB both in education and in socialization is the main distinguishing feature of an intellectually autonomous personality. Then the crisis of modern education (for some reason they forget about socialization) is, first of all, the failure of a person to overcome PCBs. And, meanwhile, the role of PCBs in self-organization and self-development of a person, the ability to overcome them play a fundamental role in self-movement of the human. In addition, in this case, overcoming the PCBs mediates a turning point in the operation of the dialectical laws of unity and struggle of opposites, the transition of quantitative changes into qualitative and double negation. Something similar is described by the authors in relation to the embeddedness of shocks in the mechanism for the implementation of the above laws (Pilipenko, 2021b).

From a philosophical point of view, the crisis of modern education can be assessed in context of its impact on the integrity of society and the individual as dialectic of unity in diversity. If an individual in education has not acquired the ability to transcend, then socializing him into the structure of society does not strengthen the latter (at best, it does not change). In this state, society is ready for a quick breakdown of structural ties in extreme conditions, since only a self-developing personality with a high ability to transcend is able to quickly solve extraordinary problems. Yet another demonstration of the ultimate state of modern systems is the unprecedented decision of the governments to sever structural ties in the fight against the COVID-19 pandemic. Moreover, in a new quality, they will be restored only in the process of constructing a new reality. In other words, the societal crisis, as well as the economic crisis itself, were objectively predetermined by the state of structural ties, which gradually lost their integrity as a person lost (or limited) his abilities for self-reflection and transcending at the end of the learning process.

What are the problems with modern educational researches? They manifest itself in the following:

The absence of a dialectical view of a human as a complex system, self-sufficient and capable of endless self-movement;

The failure to investigate a human phenomenon taking into account the dialectics of self-organization and self-development of a person;

The gap of the dialectical interrelation of education and socialization as a dialectical pair of phenomena that predetermine the essence of human self-organization. As an illustration, the authors cite the already established professional judgment about the trends in the education of the future, formed by the WEF experts (Table 1) (World Economic Forum, 2015; 2021).

Table 1: Definitions of the 21st-century skills

	Skill	Definition
Foundational Literacies	Literacy	Ability to read, understand and use written language
	Numeracy	Ability to use numbers and other symbols to understand and express quantitative relationships
	Scientific literacy	Ability to use scientific knowledge and principles to understand one's environment and test hypotheses
	ICT literacy	Ability to use and create technology-based content, including finding and sharing information, answering questions, interacting with other people and computer programming
	Financial literacy	Ability to understand and apply conceptual and numerical aspects of finance in practice
	Cultural and civic literacy	Ability to understand, appreciate, analyse and apply knowledge of the humanities
Competencies	Critical thinking/ problem-solving	Ability to identify, analyse and evaluate situations, ideas and information to formulate responses and solutions
	Creativity	Ability to image and devise new, innovative ways of addressing problems, answering questions or expressing meaning through the application, synthesis or repurposing of knowledge
	Communication	Ability to listen to, understand, convey and contextualize information through verbal, nonverbal, visual and written means
	Collaboration	Ability to work in a team towards a common goal, including the ability to prevent and manage conflict
Character Qualities	Curiosity	Ability and desire to ask questions and to demonstrate open-mindedness and inquisitiveness
	Initiative	Ability and desire to proactively undertake a new task or goal
	Persistence/ grit	Ability to sustain interest and effort and to persevere to accomplish a task or goal
	Adaptability	Ability to change plans, methods, opinions or goals in light of new information
	Leadership	Ability to effectively direct, guide and inspire others to accomplish a common goal
	Social and cultural awareness	Ability to interact with other people in socially, culturally and ethically appropriate way

Source: World Economic Forum. (2015) New Vision for Education Unlocking the Potential of Technology, WEF Report, Geneva, Switzerland, p.23

Table 1 does not even highlight the results that education, on the one hand, and socialization, on the other, should provide. And without such a division, it is difficult to identify ways to bridge the gap between what is and what one would like to have, through education and with the help of socialization;

Misunderstanding of the importance of a person's ability to overcome PCBs both in professional activity and in life in general;

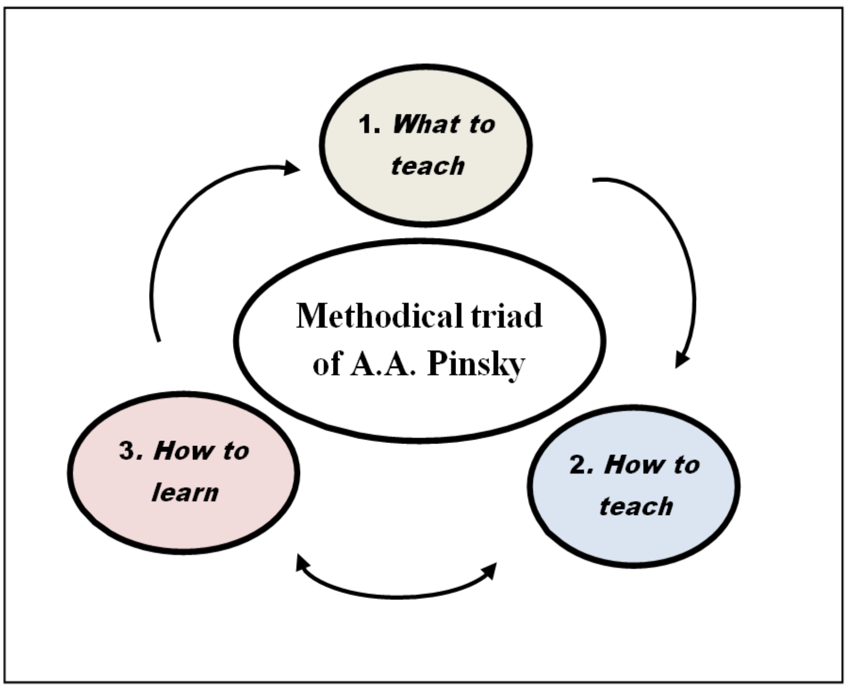
Underestimation of the role of intellectually autonomous individuals in the structuring of future reality, etc.

Thus, education in dialectical unity with the socialization of the individual has a priority role in the construction of the future post-covid reality. In this context, it becomes clear why the future intangible economy is the result of the professional activity of individuals with the qualities of intellectual autonomousness and of adequate socialization, capable of overcoming all barriers in their life path.

IV. Empirical Evidence

The authors propose analytical models that make it possible to concretize two dialectical components of a human self-organization. First, it is about education, and then the assessment of socialization is given.

Considering the problem of constructing an educational process focused on the formation of an intellectually autonomous personality, the authors proceed from the following provisions (considerations). First, we offer the following, more modern, interpretation of the triad of the methodological system proposed in the 50s of the XX century by A.A. Pinsky (Pinsky, 1978) (Fig.7):



Source: the authors' development

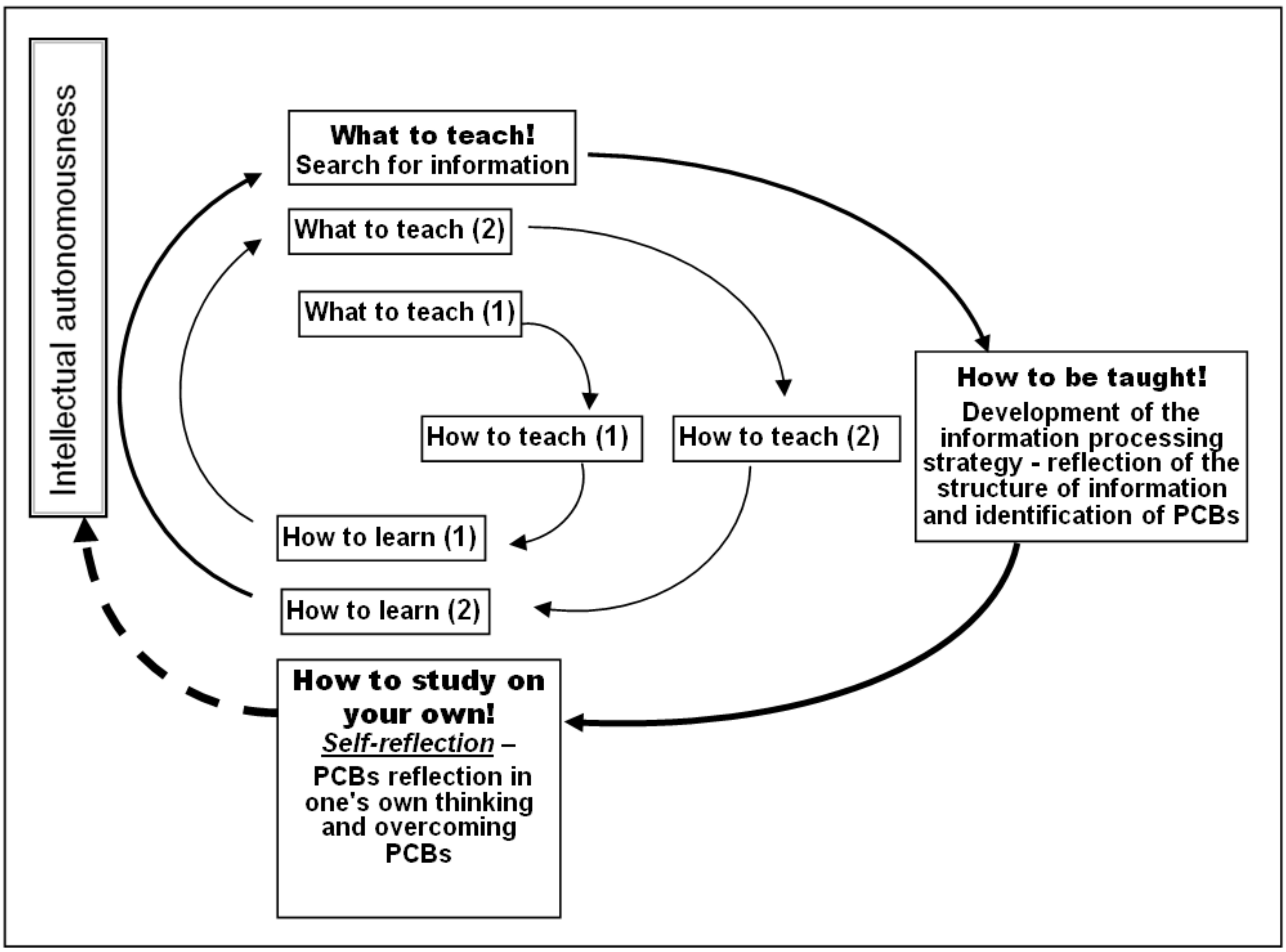
Figure 7: Methodical triad of A.A. Pinsky

1. "What to teach" should be considered as an object component of the process of self-organization of the intellectual and cognitive sphere of a person-learner;
2. "How to teach" should be considered as a subjective component of the process of self-organization of the intellectual and cognitive consciousness of a person-learner, which is based on reflection when processing information structured by the teacher;
3. "How to learn" should be considered as a process component of the self-organization of the intellectual sphere of a person-learner, based on self-reflection.

In the opinion of the authors, the active role of students in the creation or construction and structuring of knowledge is based on their own cognitive activity through reflection of the methods (samples) of structuring educational and scientific information by the teacher. Through self-reflection of their own mental strategies students form the basis of the content of the element of the triad "how to learn". Moreover, self-reflection should be understood as a formula: "I know not only what I know, but I also know why I know it and how I know it." (How I think about my thinking).

Second, in the process of self-movement of a student, ultimately, his transition from self-organization to self-development takes place. The main role in this process is played by the timely organization of overcoming numerous PCBs, objectively functioning in the educational consciousness of the student / the learning person and in the professional consciousness of the teacher. Therefore, the next mandatory point is the application of the theory of PCB in teaching (Pilipenko, 1997, 2015, 2020). It should be noted that it is the self-reflection formula that opens up the opportuity to independently overcome psychological and cognitive barriers. It is characteristic that PCBs, on the one hand, are the point of discrepancy between the planned and actual level of knowledge assimilation. And on the other hand, their successful overcoming mediates the action of the above mentioned dialectical laws of development.

Application of the technology of overcoming the PCBs in the cycles of the triad of A.A. Pinsky provides the transition of the learning personality from the cycles of the triad to the spirals of the expanding cognitive consciousness. This model is presented in Fig 8. It contains the principles responsible for the processes of self-organization in the consciousness of the student / the learner.

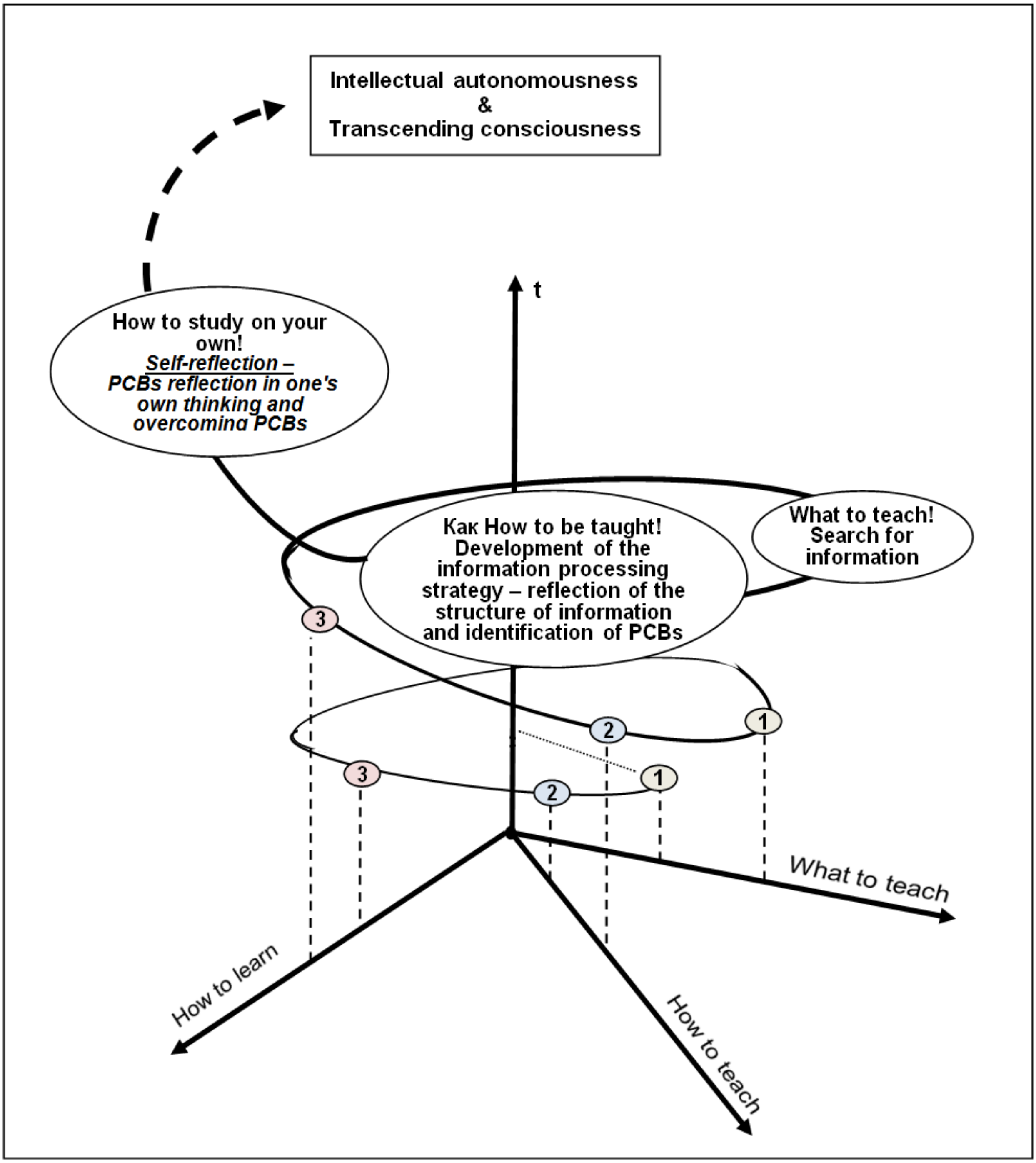


Source: the authors' development

Figure 8: The spiral of self-organization inherent in the methodological triad of A.A. Pinsky, taking into account the functioning of psychological and cognitive barriers in the expanding educational consciousness of the student (view from above)

The logic result of the educational activity described in Fig. 8 is the formation of an intellectually autonomous personality, capable of independently overcoming PCBs both in professional activity and in the field of social communication.

Figure 8 corresponds to the temporal interpretation (Fig. 9) of the development of the "spiral galaxy" of the reflective consciousness of the student in the direction of the intellectually autonomous personality.



Source: the authors' development

Figure 9: Time scan of the development of the "spiral galaxy" of the reflective consciousness of a student in the direction of the intellectually autonomous personality

Below the authors represent a differential model of the student's educational trajectory

Let the variable *x(t)* characterize the level of the student's ability to independently process scientific and educational information that comes from the teacher. It is necessary to characterize its focus on the student's effective perception of the variable *y(t)*.

Under these assumptions, it is possible to construct a system of differential equations (1), which, in the first approximation, would satisfactorily reflect the rates of supply and processing of information by the teacher and student, respectively.

$$\begin{cases} \dfrac{dy(t)}{dt} = x(t) + y(t)\left(x^2 + y^2 - 1\right) \\ \dfrac{dx(t)}{dt} = -y(t) + x(t)\left(x^2 + y^2 - 1\right) \end{cases} \quad (1)$$

At the same time, it should be noted that the speed of educational information delivery by the teacher is focused on the student's capabilities (displayed by the term $x(t)$) and contains a certain author's core $y(t)(x^2+y^2-1)$, characterizing the cyclic trajectory of the educational process.

As for the speed of processing the educational material by the student, then, first, there is a distortion of the information received (displayed by the variable $y(t)$ taken with a minus - the term $-y(t)$), and second, the core of information is also partially blurred - $x(t)(x^2+y^2-1)$.

In other words, the student's real cognitive representations are far from the cognitive (ideal!) models formed by the teacher. The phase portrait of the simulated educational trajectory is shown in Fig. 10. It should be noted that the system of differential equations (1) can be modified taking into account the lag time (τ) of the process of generating the knowledge structure in the student's educational consciousness (see system (2)).

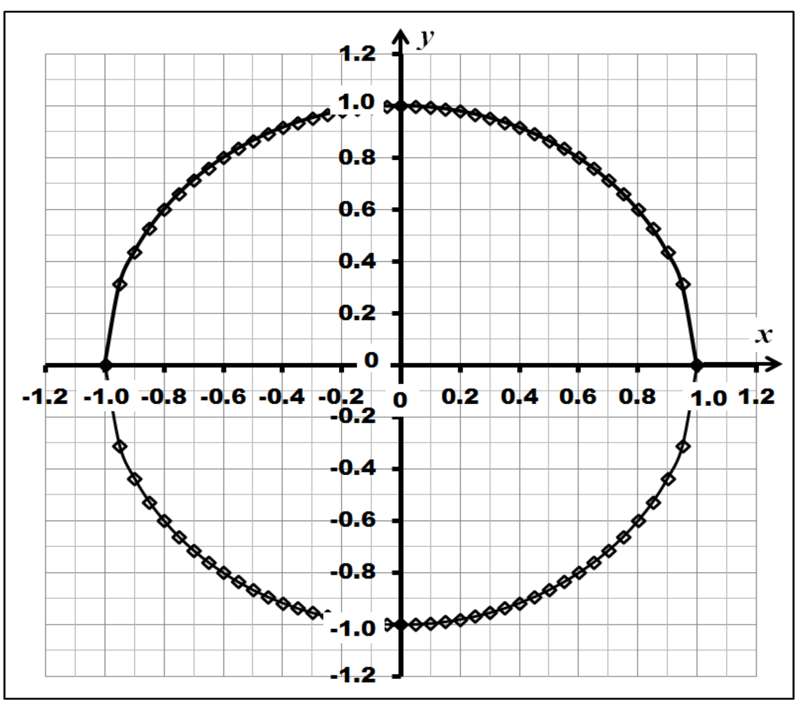
$$\begin{cases} \dfrac{dy(t)}{dt} = x(t+\tau) + y(t)\left[\left(x(t+\tau)\right)^2 + y^2 - 1\right] \\ \dfrac{dx(t)}{dt} = -y(t) + x(t+\tau)\left[\left(x(t+\tau)\right)^2 + y^2 - 1\right] \end{cases} \quad (2)$$

The phenomenon of delay in students' processing educational information received from a teacher, noted in system (2), is explained by Fig. 10 and 11.

Source: the authors' development

Figure 10: Graphical interpretation of the "actuation" of the lag time τ when the student processes the information received at the initial t_0 and arbitrary t moments of time

Thus, in education, as one of the components of human self-organization, there is a problem of dialectical interaction between a teacher and a student, which is associated with the degree of assimilation by the student of the information received from the teacher. This is what makes it possible to understand the importance of psychological and cognitive barriers in the interaction of participants in the educational process. Their incorporation into the vertical structuring of the educational trajectory allows the student, provided that PCBs are successfully overcome, to move from one structural level of his self-organization to another, and then to make a dialectical leap from the stage of their self-organization to the stage of self-development.



Source: the authors' development

Figure 11: Trajectory of system (1) in Cartesian coordinates XOY (phase portrait of a model educational trajectory)

As for the second component of the student's self-organization dialectic, the authors will demonstrate the features of socialization using the example of Russian schoolchildren before the COVID-19 pandemic. As to the dialectical interrelation between the education and socialization in the process of the human self-organization, several generalizations could be made:

1. According to J. Rasmussen (1983), the structure of the labor market can be divided depending on the categories "Skill", "Rule" and "Knowledge" into three segments. Structuring after the pandemic of the future knowledge economy/ intangible economy will occur mainly due to the third segment of "Knowledge". And in this context of the great importance becomes education, since its result should be the formation of intellectually autonomous personalities. This segment is represented by highly skilled, intellectual workers capable of solving cognitive non-routine tasks;
2. The formation of such an employee is determined by the potential of the secondary school in terms of the qualitative solution of the problem of the third element of the Pinsky triad — “how to study”, according to the PCB theory. From the point of view of the level of the school graduates learning, this should have a triple effect: first, to strengthen such components of their 21st-century skills as competencies and character qualities (Table 1), secondly, to increase the educational success (satisfaction) of students, which, in third, objectively initiates the growth of their economic success (satisfaction). It should be noted that the 1st and 3rd above conclusions have a pronounced relation to socialization;
3. Since the main result of a student's self-organization should be his formation as an intellectually autonomous person capable of creating in a non-material economy of the post-like future, then all budgetary expenditures and private financing of the education system should be interpreted as investments in a future national project. And the effect of its implementation should have a very definite economic assessment. Improving the quality of education in terms of the ability of students to completely overcome the PCB and better process and assimilate information objectively leads to an increase in the number of intellectually autonomous people who can multiply the economic effect in the knowledge economy after the pandemic. Under these circumstances, it is possible to estimate the economic return on the capital invested in education. It should be emphasized that an intellectually autonomous person combines both the qualities of high intellectual abilities, but also the desire to serve the national community (and this is already adequate socialization).

Below is the authors' assessment of the relationship between education and socialization of students in the process of their self-organization in Russia. The international PISA study revealed that in 2015 about 28% of the Russian 15-year-old students did not master the minimum necessary skills in at least one of the three areas (natural science, mathematics, and communication on their native language). By the way, in most OECD countries those indicators were much lower. This situation makes it possible to assess the level of educational failure, which prevents the formation of the necessary conditions for achieving a high level of learning and socialization in the country.

Besides, the educational failure has certain economic evaluations. So according to experts of the Centre for Strategic Research (Russia) (Centre for Strategic Research, 2018. P.3), the reduction of school unsuccessfulness twice (in our case up to 15% of all unsuccessful) corresponds to an increase in GDP growth by an additional 2% on a 10-year horizon (annual growth of 0.2%), by an additional 5-6% on a 20-year horizon (annual growth of 0.25%) and by an additional 10% on a 30-year horizon (annual growth of 0.3%). It should be noted that this effect can be achieved only if the success in education is coordinated and the value priorities of graduates and social norms are coordinated. Otherwise, the violation of the dialectical connection between education and socialization can lead, at best, to a zero amount of gain, and at worst to significant negative consequences. This conclusion was supported by the events accompanying the societal crisis caused by the coronavirus pandemic.

The correlation between educational and economic failure is high. The increase of students' economic success occurs in the process of modernization and of solution of the problem of the simultaneous rapid growth of the category “Knowledge” and the reduction of the categories “Rules” and “Skill” in the preparation of schoolchildren. This effect, according to experts of Boston Consulting Group (2017, pp. 56-57), is estimated at an additional 1.5% of annual GDP growth, which makes it possible to obtain a cumulative effect of 10 trillion roubles in current prices by 2025. The economic success as a result of adequate ion of the graduate demonstrates the state of sufficient conditions, necessary for intellectually autonomous humans to desire to become main drivers of future knowledge economy after pandemics.

Below there are presented the calculations that evaluate the Russian educational system as an investment project connected with formation of intellectually autonomous humans, highly educated and adequately socialised (Pilipenko, et al., 2019).

(1) We take half of the Russian graduates of basic school (grades 8-9) who have only a basic level of education, i.e. can use the knowledge gained at school in simple familiar situations. At the same time, about a fifth of the graduates of the basic school do not reach the threshold level of the formation of functional literacy in accordance with international requirements.

Moreover, from the beginning it is taken for granted that the problem of eliminating school failure couldn't be immediately solved, therefore an additional 0.2% annual GDP growth rate due to the reorientation of the teaching technology, an increase in the level of learning and socialization can be observed only from 2022. And before this year, it would be ideal to get additional GDP growth of at least 0.1% per year.

In order to compare the described estimates, the forecast data of GDP growth at current prices for the period 2000-2025 were constructed (Fig. 11).

To study and predict the dynamics of GDP_t, we use the capabilities of the adaptive Brown model (Brown, (1962).

The calculated value at a time moment $t+\tau$ is obtained according to the equation

$$Y_{Br}(t-1+\tau) = a_0(t-1) + \tau \times a_1(t-1) \quad (3)$$

where τ – forecast horizon (lead interval or number of prediction steps).

If $\tau = 1$, then the formula (3) takes the form:

$$Y_{Br}(t) = a_0(t-1) + 1 \times a_1(t-1) . \quad (4)$$

This value is compared with the actual level of the time series Y_t and resulting forecast error $e_t = Y_t - Y_{Br}(t)$ is used to adjust the model. Adjustment of parameters is carried out according to the formulas:

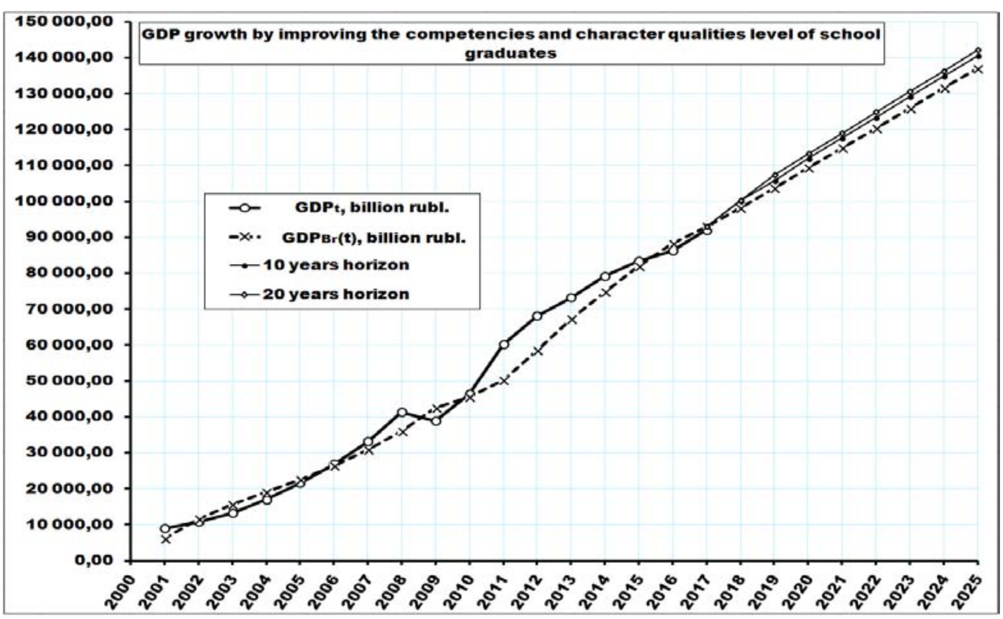
$$a_0(t) = a_0(t-1) + 1 \times a_1(t-1) + e_t(1-\beta^2) \quad (5)$$

$$a_1(t) = a_1(t-1) + e_t(1-\beta)^2 , \quad (6)$$

where β — coefficient of data discount rate, reflecting a greater degree of confidence in earlier data. Its value varies from 0 to 1. In the calculations, the value is taken as $\beta = 0.8$.

Model modification process (t = 1, 2, ..., N), depending on current forecast qualities, ensures its adaptation to new patterns of development. The model obtained in the last step is used for forecasting (if $t = N$, where N – time series).

Figure 11 shows the dynamics of GDPt (*in billion roubles*): the corresponding adaptive Brown model $GDP_{BR}(t)$ (*in billion roubles*) and point forecast for this model. In order not to overload the graph, the interval forecast is not given.



Sources: the authors' calculations based on the Rosstat' data

Figure 11: Dynamics of GDP of Russia in the scenarios: (1) forecast; (2) reduction the students' educational failure; (3) reduction of the students' economic failure for the period 2019-2025 (in billion roubles)

The corresponding adaptive Brown model $GDP_{BR}(t)$ *(in billion roubles)* and point forecast for this model serves as a basis for comparing the dynamics of GDP, which is changing due to a factor of the school failure reduction: at first this growth is additional 0.1% per year, and after 2020 - additional 0.2%. In Figure 11, this change is demonstrated by the GDP curve called 10 years horizon.

(2) As noted above, the decrease of school failure of students results in a reduction in their economic failure. Economic assessments of the reducing economic failure' effect are also given by

experts of Boston Consulting Group (2017). According to them, if you double the number of graduates from primary schools with a high level of learning, and consequently, with growing economic success, due to increasing competencies and character qualities, it could be possible to get additional annual GDP growth by a maximum of 1.5%. In Figure 11, the last changes are demonstrated by the GDP curve called 20 years horizon.

At the same time, as in the case with school failure, the lag between the introduction of new learning technologies and returns in terms of economic effect has been taken into account (Pilipenko, et al., 2019). For this purpose, the problem of the economic return due to the reduction of the economic failure of general school graduates are differentiated as follows: in two years (2019-2020) the effect of improving preparedness is calculated only for 1/5 of the unsuccessful students because of the increase of the level of their competencies and character qualities. Then, since 2020, the economic effect is calculated as an additional 0.3% of annual GDP growth rate (+1.5% GDP per year are divided into 5). In Figure 11, this change is demonstrated by the GDP curve called 20 years horizon. It could be reasonable to add an extra 0.3% GDP growth each year, beginning from 2020. But the process of reducing school failure of the students and the following economic failure is a very long way, with a large number of problems and various obstacles. Fig. 11 demonstrates the conservative variant of the economic progress.

(3) But the above assessments let us present the education system financing as the investment project. For this purpose the table is built (Table 2) to show the GDP (projected) in current prices, the net economic effect of reducing school unsuccessfulness of students (GDP, 10 years horizon) and of decreasing their economic unsuccessfulness (GDP, 20 years horizon) and education financing at the level of 2018 plans (3.6% of GDP) which is unchanged for the entire forecast period.

Table 2: Evaluation of the financing of the Russian education system from the standpoint of an investment project for the period 2018-2025 (in billion roubles)

Year	Forecasting horizon $GDP_{BR}(t)$, billion roubles (1)	Extra GDP growth due to the reduction of educational failure of schoolchildren (10 years horizon) (2)	Extra GDP growth due to the reduction of economic failure of schoolchildren (20 years horizon) (3)	Education system financing as planned for 2018 (3,6% GDP) (4)
2018	98 200.591	1 965.778	2 064.076	3 535.221
2019	103 740.937	2 071.683	3 547.639	3 734.674
2020	109 281.284	2 707.994	3 966.042	3 934.126
2021	114 821.630	2 852.321	4 192.293	4 133.579
2022	120 361.977	3 117.009	4 403.992	4 333.031
2023	125 902.323	3 272.902	4 615.690	4 532.484
2024	131 442.670	3 423.046	4 827.388	4 731.936
2025	136 983.016	3 573.190	5 039.087	4 931.389

Source: Pilipenko, et al., 2019

If considering education financing (4) as net costs, then GDP growth from the reduction of educational unsuccessfulness (3) and of economic unsuccessfulness (2) could be treated as net return on education investments. There have not been given the further authors' estimates of return on education investment from the view point of an investor, since the data obtained indicate unrealistically high (speculative) profits (significantly more than 100%).

In any case these calculations prove that even in conservative scenarios, Russian education can give a tremendous impetus to the growth of the national economy. But this will happen only if we take into account the many "BUTs", connected, first of all, with formation of high quality education and of adequate socialization. To do this, it is necessary to rethink the approaches to organizing the education system through the prism of the dialectics of interaction of all participants in the educational process, taking into account the dialectics of education and socialization of students, overcoming numerous PCBs for the purposes of their self-development as intellectually autonomous individuals. Without such fundamental transformation of the approaches to the education and socialization of the younger generation, it hardly makes sense to wait for the knowledge economy construction in the short run in Russia.

V. Conclusion

According to the President of the European Central Bank Christine Lagarde (WEF, January 2021) 2021 will be accompanied by a very high level of uncertainty – until the moment when there will be a transition to a "new economy". And in this uncertainty, according to the WEF debates, another specificity of the future reality has appeared. The latter is due to the fact that, despite all previous experiences of post-shock recovery of countries of the world, each country will have to get out of the current global pandemic in isolation, oriented only on national capabilities. And the main resource that each country can count on is associated with its own humans and their level of education and socialization. In modern conditions, this workforce must have the quality of intellectual autonomousness in order to be able to "launch" a new "technological platform" and construct a dynamic economy and integrated society on its basis.

So the formation of self-developing national systemic integrities will lead to a significantly greater variety of forms of their organizations, which will be regulated by a completely unique variety of embodiment of the capabilities of the technological revolution 4.0 in combination with a national workforce with the qualities of intellectual autonomousness. In other words, each country will go its own way to the post-pandemic future.

As a result, on the one hand, a significant number of fundamental questions were formed, united by one – “what to do?”, and on the other, a set of necessary elements was formed, which makes it possible to solve the existing puzzle. Indeed, the structures of both the economy and society are being destroyed under the influence of the dialectical law of denial of denial, people have lost confidence in the nation state, ceased to consolidate in the fight against the COVID-19 pandemic, and increasingly become in opposition to all preventive actions of the government in connection with the coronavirus. This is on the one hand. On the other hand, industrial revolution 4.0 rapidly spreads new technological solutions and gradually covers all spheres of human activity (Schwab, 2018; Schwab, et al., 2020a, 2020b). It was the CEOs of self-sufficient companies who were the first to raise the issue of talents, without which new technological projects cannot be introduced, new structural ties in the economy cannot be built, a new social reality cannot be constructed, and the collapsing relationships of human systems with nature cannot be harmonized. Thus, the humanitarian catastrophe caused by the COVID pandemic overnight reduced the human-created structural ties to ruins and at the same time gave humanity a chance to solve the riddle of a new post-covid reality, putting a person with the quality of intellectual autonomousness and the human-centric principles of organizing his activities on the basis of the systemic integrity.

It is the person, as the main subject of goal-setting in society and the main beneficiary of all the results obtained, who must become the main actor, embodying the technological and socio-economic reality of the future Berger, et al., 1966). A person with the qualities of intellectual autonomousness is able to understand the principles of interaction of material innovations introduced by various technologies, to combine digital production technologies with the biological world. These fantastic plots can only be realized by a person with the qualities of intellectual autonomousness, capable of solving the most complex problems, both in theory and in practice. Given the rapid spread of new technologies and the breadth of their coverage of the spheres of human activity, the requirements for highly qualified specialists, adequately socialized are radically changing in connection with the enormous opportunities of the industrial revolution 4.0 (Cook, (ed.), 2019).

As a result, the role of education and socialization in the formation of the human with qualities of intellectual autonomousness changes (Becker, 1985a, 1985b; Schultz, 1960; Schultz, 1961; Mincer, et al, 1995). To understand the deep psychological patterns of changes in the essence of education, the authors were forced to delve into the theoretical aspects of human psychology and the psychology of education (Slobodchicov, et al., 1995; Slobodchicov, et al., 2000; Slobodchicov, et al., 2013). At the same time, the interpretation of the human phenomenon by the authors is consistent with the opinion of the great humanists (Vernadsky, 1960; Vernadsky, 2018; Gumilev, 2012a; Gumilev, 2012b), who associated it with a variety of known and unknown properties and qualities that, under certain conditions, can manifest themselves in society and be used for the benefit of social progress. In human psychology, the processes of self-organization and self-development interact dialectically, which predetermine its properties to reflection and to transcendence. In the conditions of the formation of a new technological paradigm, the most important property of a person is his ability to transcendence as the essence of the mechanism of the human socialization. This is due to the fact that an intellectually autonomous person is capable of self-development, easily adapts to a rapidly changing external environment, and copes with non-trivial problems due to the growing uncertainty of future transformations in all spheres of human activity. However, the emergence of the ability to transcend should be preceded by self-organization of a person in the process of education, socialization, and the generation of his ability for intellectual autonomousness.

In the context of the modern 4th technological revolution, the problems of self-organization and self-development of a person came to the fore. And this is critically important, since today humanity has two alternatives: either put man at the forefront and take all measures so that the subject-creator begins to structure a promising future; or do not change anything and each time return to unsolved problems that predetermine stagnation and regression. The latter option brings mankind closer to the catastrophe of its own, of society and of the entire eco-natural system, which nurtured a person as its child. But in any case progressive trends will for sure prevail, but time could be lost and it will be much more difficult to start all over again with the participation of those generations whose parents lost the chance for a better life, first because of the pandemic, and then because of the short-sightedness of political decision-makers. The most important thing is that it should not become too late, as environmental problems grow to catastrophic proportions.

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Contribution of Banks on Agricultural Development in Bangladesh

By Ratna Khatun

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Keywords: agriculture, agricultural credit, agricultural development, bangladesh.

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CONTRIBUTIONOFBANKSONAGRICULTURALDEVELOPMENTINBANGLADESH

Strictly as per the compliance and regulations of:

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I. Introduction

Bangladesh gained independence in 1971. Since it's independence agriculture has been the core sector of Bangladesh economy. According to the 1981 census, 83 percent of the labour force are employed in rural areas; 61 percent in agricultural activities. Bangladesh is an agrarian country where agricultural sector plays vital role in accelerating the economic growth by providing inputs to agro-based industries, creating employment, attracting foreign direct investment.

Many factors such as soil, climate, seed quality, fertilizer, irrigation, household, characteristics, rural infrastructure, labour efficiency, managerial capability, use of modern technologies etc influence the productivity of agriculture. In that case timely and adequate flow of agricultural credit can meet farmers demand to ensure agricultural productivity. It can increase quality and quantity of input used in the production process.

Bangladesh is a developing country where the banking system plays a vital role in the progress of its economic development. As mentioned earlier that Bangladesh is an agrarian country, the economic growth will be slowed down if the finance is not provided to the agricultural sector. Keeping this in mind, for the development of agricultural sector the Government of Bangladesh has established two specialized banks namely; Bangladesh Krishi Bank (BKB) and Rajshahi Krishi Unnayan Bank (RAKUB). These banks are continuously working for the development of agricultural sector; Firstly , they are trying to promote saving among middle and lower middle class of urban and rural areas. Secondly, these banks increase investment in different sectors of agriculture, industry, trade. These banks also provide micro-credit which will help the disadvantaged people to become self sufficient.

Day by day both public, private and foreign commercial banks are incorporated under agricultural credit program. Specialized and commercial government bank as well as NGO& MFIs have their decentralized branch network system in remote areas throughout the country. These formal sectors provide agricultural credit to the poor farmers in the rural areas (small, marginal and landless farmers) so that farmers can purchase agricultural input timely which help to stimulate food production and improve the livelihoods of poor farmers.

Agricultural credit plays an inevitable role in agricultural productivity. The contribution of agriculture sector to the GDP in FY 2019-20 is 13.35 percent (Bangladesh Economic Review 2020). According to the Labour Force Survey 2016-17, 40.62 percent of the total labour force of the country is engaged in agriculture. It also makes a significant contribution to the growth of the service sector. In addition, we cannot deny the role of agriculture in ensuring food security for a growing population from the declining arable land as well as the impact of climate change.

II. Review of Literature

Akther, M., Younus, D.S., Parveen, F. and Chowdhury, M.M.I.(2016) in their study try to examine whether rural financing played any role in reducing rural poverty and thus increased sustainable economic development in Bangladesh. They tried to identify the determinants of rural poverty in Bangladesh using priority sector lending such as agricultural sector credit, rural employment, female employment, agricultural production and credit to gross domestic product and per capita income as independent variables. The empirical estimation for the sample period from 1984 to 2014 suggests that all the explanatory variables in the model are significant and are found to be negatively related to rural poverty. The elasticity of the rural poverty with respect to priority sector lending is -0.27 implying that a one percent increase in priority sector lending will reduce rural poverty by 0.27 percent on average.

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Alauddin, Md. and Biswas, Joytirmay (2014) in their study recognize that a timely flow of agricultural credit can meet farmers demand to ensure agricultural productivity. Their study reveals that formal sector has flourished in recent years in disbursing agricultural credit where previously informal sector dominated the rural credit market for agriculture. Many local private commercial banks and foreign banks are using the channels of NGOs to provide agricultural credit as NGOs have a stronger network throughout the country.

Islam, M.A., Islam, M.R. Sddiqui, M.H. and Karim, L. (2014) in their study found that farmers have lack of savings and scarcity of resources. So agricultural credit is a solution for the farmers to start their agro-farms and business. Availability of credit on time is important requirement for the rural people, particularly under conditions of scarcity of resources and uncertainty.

Chowdhury D.T.A and Chowdhury, M.S.S. (2011) in their study analyzed the development of different services and facilities are provided by the specialized agricultural banks in Bangladesh for the overall improvement of agricultural sector. Their study reveals that both agricultural banks are able to achieve a steady growth in terms of employees, branches, deposits, loans and advances.

Patwary, M.S.H. (2017) in a study found that agricultural credit plays an inevitable role in agricultural productivity, since it has increased the quantity and quality of inputs used in production process.

Challenges faced by the farmers in getting agricultural credit:

Long institutional procedure: The main problems faced by the farmers in getting agricultural credit are the long institutional procedure. It takes too time and formalities to process agricultural credit. As most of the small and marginal farmers have lack of knowledge about this formal procedure they always feel fear about formalities, documentation of financial institutions. A research work conducted by Ruhul Amin Sarkar (2006) revealed that 90 percent of all size farmers think that long institutional procedure is the major impediment in getting loans from institutional source. This lengthy procedure hampers the productivity of farmers. As farmers incapable to purchase agricultural inputs on time due to lack of cash.

Urban bias of banking operation: In Bangladesh financial institutions are mostly urban biased. In many rural areas have a few or even no financial institutions. People in such areas have to cross long distance to reach financial institution and after fulfilling the requirement of financial institutions they get agricultural credit. For this reason farmers in rural areas are discouraged to get loan. So balanced sector wise development of financial institutions are needed.

Lack of Collateral: Formal sector wants collateral as security of the credit that they disburse to the farmers. Formal sector also takes socio-economic status of a credit seeker into consideration when it decides to disburse agricultural credit. These make cheap formal credit accessibility more difficult for the marginal and sub- marginal and small farmers. This forces them to take loan from semi- formal institutional and non-institutional source.

Higher non- interest cost of institutional credit: Alam (1981) identified four types of non-interest cost of institutional loan such as; (a) application fees, stamp, and documents required in support of loan; (b) from filling and writing, (c) Cost of traveling for loan negotiation; (d) Cost of entertaining people who assisted in loan negotiations. He observed that non-interest cost of borrowing falls as loan size increases. Higher non-interest cost of institutional credit for the small farmers acts as a hindrance to the development of productive force.

Difficult credit rules: Most of the illiterate and partially educated farmers cannot understand difficult credit rules of banking institutions. For this reason, they try to collect loan from informal sector where there is simple rule for loan. It is also found that agricultural loan are often used for political motives. Farmers need political power to get loan.

Weekly basis installment system: Most of the cases farmers who take loan from formal sources have to repay installment on weekly basis. As agricultural production takes time and income is received only after harvesting. So farmers who have no other sources of income, paying installment weekly becomes difficult for them.

Discrimination in disbursing loan between male and female: There is discrimination in the allocation of loan between male and female. Per head disbursement of agricultural credit to male beneficiary is much higher than female beneficiary.

III. Impact of Caovid-19 on Agricultural Sector

Covid-19 has an impact across all economic sector including the agricultural sector. Because of lockdown cost of production increases. During lockdown labour cannot move from place to place. As a result there arises labour shortage in agricultural sector. The shortage of labour increases labour wages. As agricultural production is labour intensive, so the rise in labour wages increase the cost of agricultural production. Farmers also face higher cost of transportation during lockdown. So it is easily understand that the cost of all agricultural inputs increases because of lockdown. The Covid-19 crisis will also reduce food demand as a result of declining incomes and lower frequency of visiting markets to maintain social distance. The negative impact is already visible – the daily star reports that despite bumper production of fruits, growers are incurring losses as the price has fallen drastically in the local markets of the districts due to the outbreak. Lockdown strategies entail a number of protective measures to reduce the Covid-19 infection. This includes border closures, travel restrictions, restaurant closures, and trade disruptions etc. There is a deep cut in the price of products because of low demand. As cost of production is high but price of the product is low, so farmers incur loss. A study conducted by BIGD in June 2020 shown that because of the pandemic, Boro farmers lost seven percent of their estimated yield in 2020 which nationally amount to 4.82 crore mounds, equivalent to BDT 3,687 crore. Because of the labour shortage, labour wage went up by 17 percent. The cost of other inputs also increased because of disrupted transportation. As a result Boro farmers faced a 40 percent loss in expected profit.

So due to outbreak of the Novel Corona Virus, it is necessary to provide agricultural loan at low interest rate for continuing food production and food supply at normal level. With this view banks are instructed through the ACD circular -02 dated; 27 April 2020 to provide agricultural loan at 4 percent concessional rate (maximum) for cultivating grain crops, cash crops, vegetables and tuber crops as mentioned in agricultural and rural credit policy program. Against the disbursement of these loans, banks will be reimbursed at 5.0 percent as interest loss from Bangladesh Bank. These facilities will be continued up to 30 June 2021 effective from 1 April 2020.

IV. Methodology of This Study

This study has been done mainly based on secondary data. The relevant data and informations were collected from annual reports of Bangladesh bank and websites of various bank on Bangladesh, Bangladesh Economic Review (BER) and Bangladesh Bureau of statistics (BBS) publication of various years. In this study we analyze data for the period 2001 to 2020. The data analysis includes the view point of lenders, agricultural sub- sector, overall agricultural credit performance etc. MS excel software was used for analyzing and presenting data in a meaningful way.

V. Analysis and Finding

Table 1: Comparative analysis of target and actual disbursement; recovery; outstanding; overdue and overdue as percentage of outstanding of agricultural credit during 2001-20 (Tk in Billions)

Year	Disbursement (Target)	Disbursement (Actual)	Gap/ Achievement %	Recovery	Total Outstanding loan	Overdue	Overdue as Percent of outstanding
2001	32.66	30.20	92.47	28.78	111.37	67.59	60.69
2002	33.30	29.60	88.89	32.60	115.00	67.60	58.80
2003	35.61	32.78	92.05	35.16	119.13	65.26	54.78
2004	43.79	40.48	92.44	31.35	127.06	62.65	49.31
2005	55.38	49.57	89.51	31.71	140.40	57.81	41.18
2006	58.92	54.90	93.18	41.64	153.76	66.50	43.27
2007	63.51	52.93	83.34	46.76	145.82	66.35	45.50
2008	69.75	61.67	88.42	43.75	158.49	58.37	36.83
2009	74.66	69.92	93.65	66.14	171.70	60.49	35.23
2010	84.53	82.79	97.94	76.51	199.61	63.66	31.89
2011	89.86	92.10	102.50	89.19	225.99	59.72	26.43
2012	138.00	131.32	95.16	123.59	259.75	60.52	23.30
2013	141.30	146.67	103.80	143.62	310.58	52.09	16.77
2014	145.95	160.37	109.90	170.46	346.84	76.12	21.95
2015	155.50	159.78	102.80	154.07	329.37	67.29	20.43
2016	164.00	176.46	107.60	170.56	344.77	56.78	16.47
2017	175.50	209.99	119.65	188.41	390.48	67.08	17.18
2018	204.00	213.93	104.87	215.03	406.01	72.11	17.8
2019	218.00	236.16	108.33	237.34	429.01	69.9	15.6
2020	241.0	227.5	94.32	212.5	455.9	60.6	13.3

Source: Bangladesh Bank Annual Report (2001-2020).

Disbursement of agricultural credit by banks follows an upward tend. In 2001, disbursement of agricultural credit was Tk 30.20 billion. In 2020 it has reached at Tk 227.5 billion. The increase in agricultural credit disbursement has positive impact. It has increased the quality and quantity of input used in the production process of agriculture. Today's agriculture uses sophisticated technologies such as reapers, tractors, axial flow pumps, seeds drills etc. That requires more capital. So the increase in agricultural credit disbursement can help the farmers by providing capital. As a result farmers can use improved technology in the production process that yield bumper production. The recovery of agricultural credit in 2001 was Tk 28.78 billion. It has reached Tk 212.5 billion in 2020. This shows that banks perform well in the recovery of the agricultural loan. Overdue literally means "past the due date".

Bills that aren't paid on time are overdue. Overdue as percent of outstanding is Tk 60.69 billion but it has reached Tk 13.3 billion in 2020. This is because initially agricultural credit disbursed through government banks. But the performance was very poor because of inefficiency and corruption of the employees and bureaucratic problem and political interferences in government institutions. At present this situation is improving day by day after the establishment of good governance in government banks. Besides that participation of private commercial and foreign commercial banks also help to improve credit disbursement.

Table 2: Comparative analysis of overdue as the percentage of the total outstanding agricultural credit by various banks during (2002-2020) (Tk in Billions)

	Outstanding agricultural credit				Overdue				Overdue as % of outstanding			
Year	SCBs	SBs	PCBs	FCBs	SCBs	SBs	PCBs	FCBs	SCBs	SBs	PCBs	FCBs
2002	33.46	66.03	_	_	24.17	30.55	_	_	72	46.27	_	_
2003	34.80	68.96	_	_	24.19	28.4	_	_	69.51	41.18	_	_
2004	37.5	73.2	_	_	23.6	27.1	_	_	62.9	37.02	_	_
2005	40.89	81.65	_	_	18.45	26.44	_	_	45.12	32.38	_	_
2006	49.69	85.37	_	_	28.06	25.08	_	_	56.47	29.38	_	_
2007	49.11	85.89	_	_	29.32	32	_	_	59.70	37.26	_	_
2008	49.11	98.92	16.73	3.01	26.33	28.81	0.50	0.00	53.12	29.12	2.99	0.00
2009	53.19	108.37	18.55	5.73	26.33	29.78	0.31	0	50.06	27.48	1.67	0
2010	60.99	128.32	21.08	5.19	26.46	32.93	0.38	0.00	43.38	25.66	1.80	0.00
2011	64.36	149.37	26.62	3.31	25.83	29.42	1.25	0.00	40.13	19.70	4.70	0.00
2012	67.56	147.37	42.56	2.26	23.99	35.22	1.31	0.00	35.51	23.90	3.08	0.00
2013	73.63	174.47	59.78	2.70	24.57	25.26	2.26	0	33.37	14.48	3.78	0
2014	79.07	199.42	64.01	3.83	25.39	47.95	2.78	0.0004	32.11	24.04	4.34	0.01
2015	84.04	177.09	66.11	2.13	26.21	38.94	2.14	0.0036	31.19	21.99	3.24	0.17
2016	87.16	175.08	80.24	2.29	23.02	32.01	1.75	0.0030	26.41	18.28	2.18	0.13
2017	94.60	188.11	104.22	3.55	25.64	38.88	2.56	0.003	27.10	49.46	2.46	0.08
2018	103.05	198.4	101.41	3.14	30.35	38.17	3.59	0.00	29.45	19.24	3.54	0.00
2019	107.19	209.83	108.51	4.22	23.98	33.26	9.68	0.00	22.37	15.85	8.92	0.00
2020	110.73	220.35	119.57	5.28	20.93	32.67	6.98	0.00	18.90	14.83	5.84	0.00

Source: Bangladesh Bank Annual Report (2002-2020)

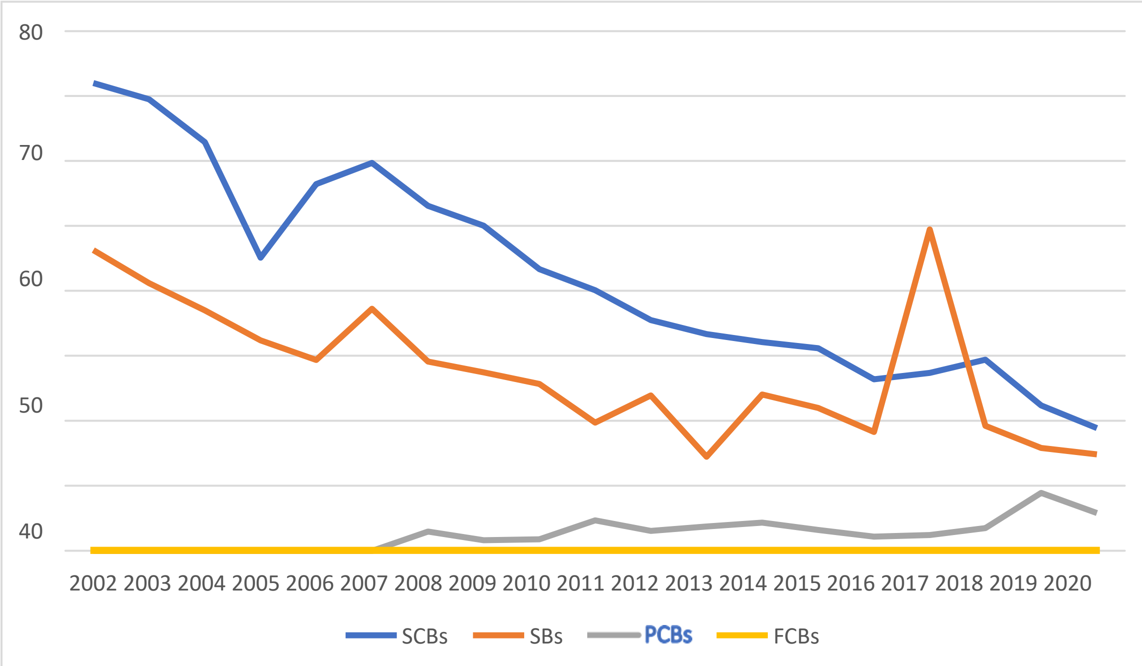


Figure 1: Performance of various types of banks in Bangladesh. Measured by overdue as percentage of outstanding (plotted in vertical axis) during the year 2002-2020 (plotted in horizontal axis)

Table 3: Agricultural Credit Allocation by Sub Categories (2001-2020)

Year	Crops Share (%)	Livestock Share (%)	Fisheries Share (%)	Poverty Allocation Share (%)	Others Share (%)
2001	45.10	2.62	2.68	14.27	35.33
2002	43.11	3.72	2.27	15.67	35.24
2003	51.77	4.51	1.71	8.96	32.94
2004	45.58	6.13	2.74	9.98	35.57
2005	42.53	5.75	2.70	13.69	35.32
2006	40.10	5.02	4.20	27.62	23.05
2007	43.19	5.04	4.55	23.71	23.50
2008	39.95	4.80	5.24	27.38	22.62
2009	40.82	4.49	4.89	30.90	18.88
2010	40.09	4.93	4.83	32.33	17.82
2011	40.04	4.64	5.05	17.69	32.58
2012	48.55	5.86	5.93	11.80	27.87
2013	43.87	12.29	9.01	11.30	23.53
2014	44.47	12.45	8.59	11.62	22.87
2015	47.59	12.87	10.53	9.27	19
2016	49.27	14.81	11.25	8.83	15.83
2017	47.9	14.6	11.5	9.0	17
2018	48	14	12	10	16
2019	50.30	13.74	11.34	8.24	16.38
2020	50	14	11	9	16

Source: Bangladesh Bank Annual Report (2001-2020)

From the above table-3 we see that crops share of agricultural credit was 45.10% in 2001. It has reached 50% in 2020. Similarly livestock, fisheries, poverty alleviation and others share of agricultural credit follows an upward trend. Definitely it has positive impact on the productivity of agriculture.

The agricultural sector can be broken down into five main components: crops, livestock, fisheries, poverty alleviation and others. Bangladesh poses development in each of these subcategories. According to the combine estimate of BBS, Ministry of Agriculture and Department of Agriculture Extension (DAE). In FY 2019-20 total food grains production target is 454.04 lakh MT. If the growth of fish production continues, the fish production in the country is expected to be 45-52 lakh MT (Department of Fisheries, Ministry of Fisheries and Livestock).

In the same manner livestock, poverty, alleviation and others contribution to the agriculture and to the economy increases day by day.

Table 4: Comparative Statement of no of total beneficiary of agricultural credit, female beneficiary, % of female beneficiary, amount of agricultural credit disburse to female beneficiary and % of amount disburse to female beneficiary out of total disbursement of agricultural credit during 2011-17 (Tk in Billions)

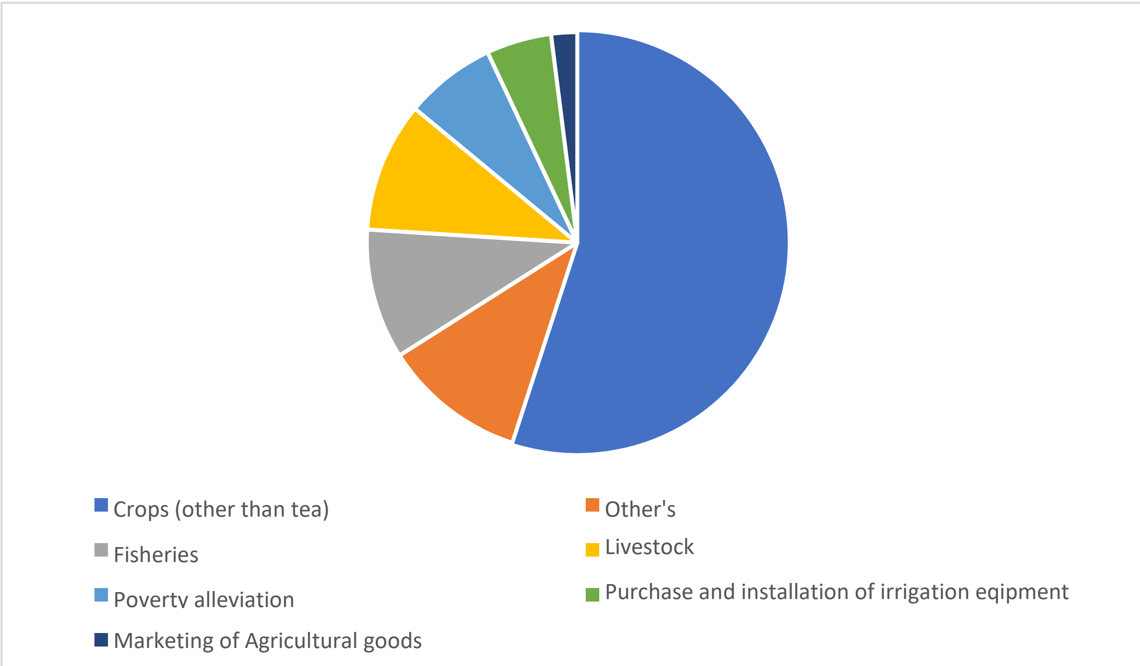
Year	No of total beneficiary	No of female beneficiary	% of female beneficiary	Amount disburse to female beneficiary	Actual disbursement of agricultural credit	%of amount of agricultural credit disburse to female beneficiary out of total agricultural credit
2011	2700408	332334	12.31	7.25	92.10	7.87
2012	3036144	320428	10.55	7.35	131.32	5.60
2013	3310024	444546	13.43	12.45	146.67	8.49
2014	3285936	589942	17.95	16.12	160.37	10.05
2015	3194950	265562	8.31	9.00	159.78	5.63
2016	3426130	1519578	44.35	44.80	176.46	25.38
2017	3856635	1847065	47.89	62.40	209.98	29.71

Source: Bangladesh Bank's Agricultural and Rural Credit Policy and Programme (2011-2017)

Women participation in agricultural credit is increasing day by day. It helps women to become self-sufficient. Nowadays women engage in Agro-farming instead of being unemployed which help them to contribute for the family and the nation. From the above table we see that in 2017 percentage of female beneficiary was 47.89. That means out of every 100 beneficiaries of agricultural credit 48 are female. But % of amount of agricultural credit disburse to female beneficiary out of total agricultural credit had reached 29.71 in 2017. That indicates out of every 100 taka disbursement women got only 29.71 taka. The situation also reveal that women also face discrimination in per head credit disbursement. Proper credit disbursement between male and female can reduce this discrimination.

VI. Graphical Analysis

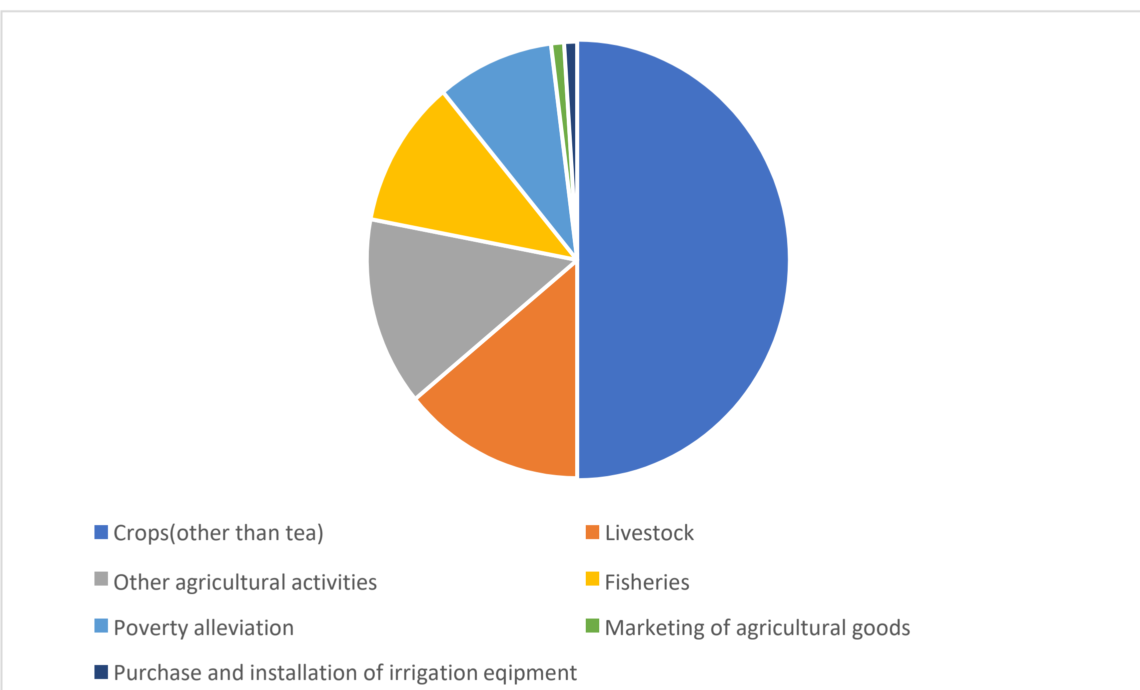
Target of Agricultural Credit Disbursement in FY20



Source: ACD, BB

In FY 20, 55 percent of the total agricultural credit targeted to disburse to the crop sub- sector followed by live-stock and poultry (10%), other agricultural activities(11%), fisheries (10%), poverty alleviation (7%), purchase and installation of irrigation equipment(5%), marketing of agricultural goods (2%).

Actual Agricultural Credit Disbursement in FY 20



Source: ACD, BB

In FY20, 50 percent of the total agricultural credit distributed to the crops sub-sectors followed by live-stock and poultry (14), other agricultural activities (14%), Fisheries (11%) poverty alleviation (9%), purchase and installation of irrigation equipment (1%), marketing of agricultural goods (1%).

From this analysis, we find that agricultural credit distributed to the sub categories has increased and it has crossed the targeted disbursement.

VII. Conclusion

As a developing country, Bangladesh has to rely on agricultural sector in every respect of economic activities. There is a huge importance of the agricultural sector in order to generate employment and fulfilling the increasing food demand for a rapidly growing population. From the analysis, it is reflected that agricultural credit can be played a significant role in promoting the development of the agricultural sector.

The comprehensive policy initiatives of Bangladesh Bank have fostered the agricultural credit access for the poor farmers. Now a days, the integrated efforts of commercial banks including NGO- MFIs also help to expand the access to agricultural credit. Agricultural credit to poor farmers help to increase agricultural production and their household income. The proper policy support for credit program plays a vital role in credit financing to the agricultural households. It will help to ensure sustainable agricultural production growth.

So to increase the access to agricultural credit banks should reduce the formal procedure. Minimum formalities with flexibilities can encourage farmers to find loan from formal sector. Banks can arrange seminar to discuss about the formalities of the loan so that farmers can easily understand how to do formalities to get loan

As farmers have lack of resources so in that case collateral acts as a hindrance to get agricultural credit. So formal sector should disburse agricultural credit with less amount of collateral which farmers can bear easily. Political interference in the agricultural sector must be removed.

Financial institutions and financial services should spread at the remote and rural areas. It will help easy access to financial services for the people of such areas.

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FELLOW OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL is the most prestigious membership of Global Journals. It is an award and membership granted to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

> The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Fellows are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Fellow Members.

Benefit

To the Institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.

Exclusive Network

Get access to a closed network

A FMBRC member gets access to a closed network of Tier 1 researchers and scientists with direct communication channel through our website. Fellows can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation

Certificate

Certificate, LoR and Laser-Momento

Fellows receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation

Designation

Get honored title of membership

Fellows can use the honored title of membership. The “FMBRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FMBRC or William Walldroff, M.S., FMBRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Fellow members of FMBRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation. All fellows get a dedicated page on the website with their biography.

Career | Credibility | Reputation

Future Work

Get discounts on the future publications

Fellows receive discounts on future publications with Global Journals up to 60%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career Financial

GJ Account

Unlimited forward of Emails

Fellows get secure and fast GJ work emails with unlimited forward of emails that they may use them as their primary email. For example, john [AT] globaljournals [DOT] org.

Career Credibility Reputation

Premium Tools

Access to all the premium tools

To take future researches to the zenith, fellows receive access to all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

Conferences & Events

Organize seminar/conference

Fellows are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

Career Credibility Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All fellows receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

Exclusive

Publishing Articles & Books

Earn 60% of sales proceeds

Fellows can publish articles (limited) without any fees. Also, they can earn up to 70% of sales proceeds from the sale of reference/review books/literature/publishing of research paper. The FMBRC member can decide its price and we can help in making the right decision.

Exclusive Financial

Reviewers

Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

Access to Editorial Board

Become a member of the Editorial Board

Fellows may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. Additionally, Fellows get a chance to nominate other members for Editorial Board.

Career Credibility Exclusive Reputation

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 5 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 10 GB free secure cloud access for storing research files.

AMBRC

ASSOCIATE OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL

ASSOCIATE OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL is the membership of Global Journals awarded to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

> The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Associate membership can later be promoted to Fellow Membership. Associates are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Associate Members.

Benefit

To the Institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.

Exclusive Network

Get access to a closed network

A AMBRC member gets access to a closed network of Tier 2 researchers and scientists with direct communication channel through our website. Associates can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation

Certificate

Certificate, LoR and Laser-Momento

Associates receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation

Designation

Get honored title of membership

Associates can use the honored title of membership. The “AMBRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., AMBRC or William Walldroff, M.S., AMBRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Associate members of ASFRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation. All associates get a dedicated page on the website with their biography.

Career | Credibility | Reputation

Future Work

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Financial

Conferences & Events

Organize seminar/conference

Associates are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

Career Credibility Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All associates receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subjec.

Exclusive

Publishing Articles & Books

Earn 60% of sales proceeds

Associates can publish articles (limited) without any fees. Also, they can earn up to 30-40% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.

Exclusive Financial

Reviewers

Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 2 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 5 GB free secure cloud access for storing research files.

Associate	Fellow	Research Group	Basic
$4800 **lifetime designation**	$6800 **lifetime designation**	$12500.00 **organizational**	APC **per article**
Certificate, LoR and Momento **2** discounted publishing/year **Gradation** of Research **10** research contacts/day **1 GB** Cloud Storage **GJ** Community Access	**Certificate,** LoR and Momento **Unlimited** discounted publishing/year **Gradation** of Research **Unlimited** research contacts/day **5 GB** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**Certificates,** LoRs and Momentos **Unlimited** free publishing/year **Gradation** of Research **Unlimited** research contacts/day **Unlimited** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**GJ** Community Access

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Management Research Paper

Techniques for writing a good quality management and business research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of management and business then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.
Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.

- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

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- To-the-point depiction of the research.
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Approach:

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Approach:

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- Simplify—detail how procedures were completed, not how they were performed on a particular day.
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Approach:

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Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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