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FOREIGN DIRECT INVESTMENT IN KAZAKHSTAN: A SUCCESS STORY OVER THE YEARS OF INDEPENDENCE OF THE REPUBLIC

The article analyzes the attraction of foreign direct investment to Kazakhstan since the country gained independence. During the period under review (1991-2020), the authors made a macroeconomic analysis of statistical data on the dynamics of Kazakhstan's real GDP according to the IMF, with an emphasis on the analysis of the cyclical nature of the national economy. We analyzed in detail the inflows of foreign direct investment to Kazakhstan by volume, by type of economic activity, by types of direct investors according to the databases of UNCTAD and the National Bank of the Republic of Kazakhstan. In addition, we also analyzed the trends in attracting foreign direct investment in the CIS and Central Asia region, based on which we assessed the position of the republic in these regions in terms of attracting foreign direct investment. In addition, we gave a brief overview of the global situation on them, taking into account the pre- and post-pandemic crisis. The authors attempted to assess the effectiveness of government measures to improve the investment attractiveness of Kazakhstan and analyze the prospects for the development of the policy of attracting foreign direct investment to the republic based on the assessments of international experts. In conclusion, we gave the recommendations to improve the policy of attracting foreign investors to Kazakhstan.

Key words: Kazakhstan, independence, foreign direct investment, investment attractiveness.

Introduction

The challenges of the times constantly impose new requirements on the participants of the world economy, regardless of their level of development and the place they occupy in it. Thirty years ago the collapse of the USSR, on the one, and the need to build an independent state with its own strong economy, on the other, became the main challenge for our country. With an acute shortage of our own financial resources, we needed to make an «industrial leap forward. To solve such a difficult task, it was important to build a competent process of including the national economy not only in the world economy, but also in the world capital market, which would allow the young republic to gain access to foreign capital and with its help solve its own problems.

By the end of the last century, transnational corporations from developed countries began to move most of their labor-intensive production in the form of foreign direct investment (FDI) to developing countries, where there is huge potential for cheap labor. As a result, the world has experienced the successful growth and development of emerging markets in Southeast Asia, China, India and some Latin American countries.

According to definition of UNCTAD FDI is defined as an investment reflecting a lasting interest and control by a foreign direct investor, resident

in one economy, in an enterprise resident in another economy (foreign affiliate). FDI inflows comprise capital provided by a foreign direct investor to a foreign affiliate, or capital received by a foreign direct investor from a foreign affiliate (UNCTAD 2020).

For countries with a characteristic lack of domestic investment capital, which includes Kazakhstan, external sources of financing in particular FDI are certainly necessary. Their significant advantage in comparison with domestic investment is that with the inflow of FDI various external effects of FDI on economic development, such as the inflow of new technologies for the host country, new knowledge and experience, know-how, etc. are observed in parallel. These processes can not be provided by domestic investors for different reasons, including the comparative weakness of the economies of such countries and their weakness to external shocks. At the same time, such conditions make FDI more perceptible and widespread influence on the development of national economies, given that the external effects of FDI do not require additional costs from the host country. This explains the high relevance of the issue of research on attracting FDI all over the world, including in our republic. Based on this, the purpose of the study is to analyze the achievements of Kazakhstan in attracting FDI and receiving benefits from it over the entire period of independence of the country.

Material and methods

The article uses general scientific methods, such as the logical method, analysis and synthesis, induction, generalization and comparison, as well as statistical methods of calculation.

First, the dynamics of the FDI inflow over the years of their attraction by decades was analyzed, with a graphic illustration of the used statistical data. A comparative analysis of FDI inflows with the dynamics of the country's real GDP for the period under consideration was carried out. Analyzed the measures taken by the government of the republic to form the investment attractiveness of the country through the achievements of Kazakhstan in the FDI Index and the Doing Business ranking. The position of the republic in the Central Asian region in terms of FDI inflow was assessed, the geography of direct investor countries of Kazakhstan and the structure of FDI by type of economic activity were analyzed. Global trends in FDI attraction in a pandemic situation and the global FDI outlook were also analyzed.

UNCTAD statistical databases for Kazakhstan from 1993 to 2020 (in millions of US dollars), data from the National Bank of Kazakhstan from 2013 to 2020 (in millions of tenge), the National Bureau of Statistics of Kazakhstan and NPP «Atameken» were used for the analysis.

Graphical illustrations are made in MS Excel application.

Literature review

For Kazakhstan, the strategic task of sustainable development of the national economy since the first years of independence has been implemented through the massive attraction of foreign investment. From the beginning the emphasis on their attraction was made in the Strategy «Kazakhstan-2030», then the process was marked in the Strategic Plan for Kazakhstan 2020 and the State program for accelerated industrial and innovative development of Kazakhstan for 2010-2014. Later Yelbasy outlined the main vector of the investment policy of the country which is realized for today in the Republic: «Kazakhstan has to become a regional magnet for investments. Our country should become the most attractive place in Eurasia for investment and for the transfer of technology (Strategy «Kazakhstan-2050» 2012).

Many researches in the world show that the impact of FDI is multidimensional and affects not only the issues of economic growth and development of the national economy, they can become a catalyst for various changes in the life of the society of the coun-

try. There are studies in the economic literature, the results of which are based on large-scale empirical studies on the impact of FDI on a large number of countries; they are classics when analyzing the degree of study of the problem of the impact of FDI on host countries (Aitken and Harrison 1999, Kokko 2003, Blomstrom 2003, Blalock and Gertler 2008).

The experience of developing countries boils down to the following benefits in the form of positive direct and indirect effects of FDI in the national economy:

1. Increased productivity and growth in average per capita income in the host country.
2. Increased employment through direct and backward linkages of foreign companies with other firms, through changes in employment policies and practices.
3. The creation of new jobs in the sector of the most qualified labor force.
4. New methods of organizing management and adopting the experience of local companies.
5. Development of scientific and technological progress (STP) in the host country.
6. Stimulation of growth of export revenues by changing the structure of exports.

A reviewed of the existing literature on the impact of FDI on the economy of developing countries showed a large number of works about analysis and evaluation of the impact of FDI on various economic indicators, including social indicators. In light of them the researches on the impact of FDI on the social welfare of host countries are interesting (Rondinelli 2002, Herman et al 2004, Lehnert et al 2013, Gorodnichenko et al 2014, Choi et al 2017, Ahmad et al 2018).

Several studies (Buchanan et al 2012, Balatabaev 2014, Kurul 2017, Adhikary 2017, Mahmood et al 2019, Majeed et al 2021) analyze the external effects of FDI in developing countries, considering the rapidly changing global trends of national economies.

Regarding the research on the impact of FDI in Kazakhstan, a research (Waikar et al. 2011) found a positive impact of FDI on its macroeconomics as a whole, but they did not consider it by sector of the economy. The study (Rakhmatullayeva et al. 2015) also found no negative impact of FDI on six socio-economic indicators in the regions of Kazakhstan. The once of last studies about FDI in Kazakhstan (David M. Kemme et al 2021) analyzed the impact of integration of countries in the EAEU on FDI flows attracted by these countries. In addition, the authors analyzed the impact of infrastructure, royalties, the financial crisis of 2008, the situation with Russia (the introduction of sanctions against it) and other factors when analyzing data on the EAEU countries. As it turned out, the integration of countries has nothing to

do with their ability to attract FDI, thus FDI flows are more determined by subjective national factors.

Results and discussion

At present Kazakhstan has faced the challenges of the 21st century – Industry 4.0, the transition to a «green economy», instability in oil prices, the glob-

al financial crisis, digitalization and the COVID-19 pandemic, which require new weighted decisions and competent effective policy of the country's leadership. Over the 30 years of independence, our country has experienced five major economic crises (the fifth has not yet been overcome – author's note), which have strongly influenced the dynamics of real GDP in Kazakhstan (Figure 1).

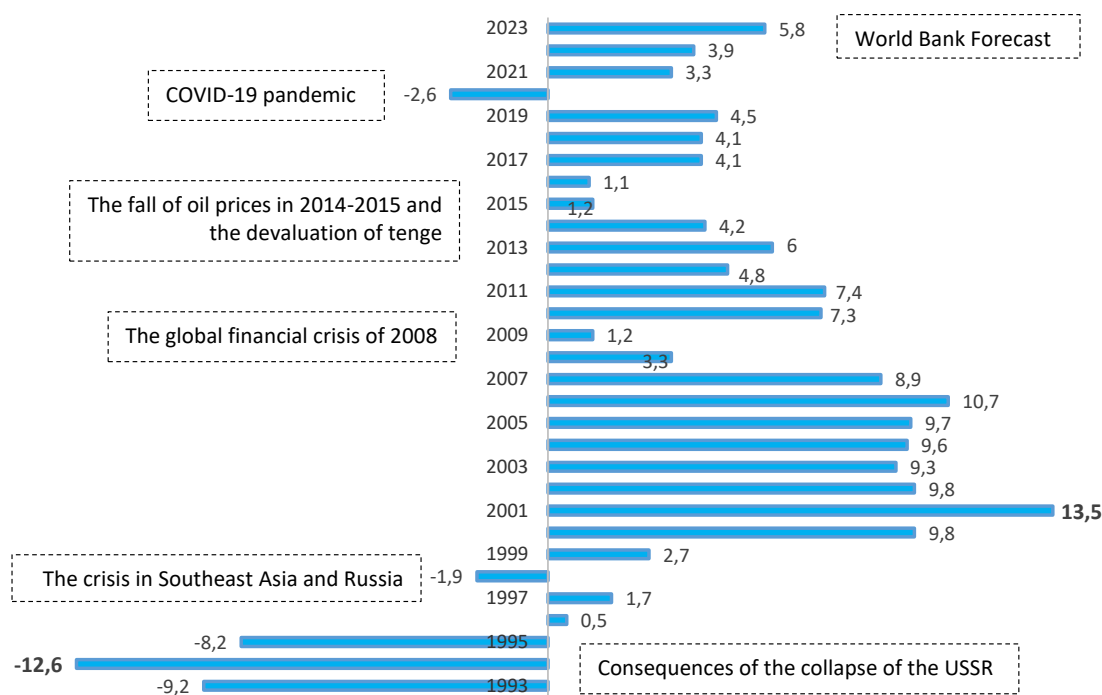


Figure 1 – Dynamics of Kazakhstan's real GDP over the years of independence, % (IMF 2021)

As can be seen from the diagram, in different years Kazakhstan's real GDP has been negatively affected by external shocks related to the situation in the world market. In the first years of independence, a decrease in real GDP was observed in 1994 – by 12.6%, which was caused by the consequences of the disintegration of the USSR and the introduction of the national currency. This decline was the largest in significance since the country gained its independence, but the competent policy of the republic's leadership made it possible to achieve the first positive GDP growth of 0.5% already after two years.

This positive trend could have continued, but the crisis in the countries of Southeast Asia, which had a negative impact on the development of the Russian economy and led to the first devaluation of the Russian ruble, had a negative impact on the economy of Kazakhstan, which was reflected in a decline of real GDP in 1998 by 1.9%. However, in the following year the national economy began to gain momentum,

and the positive dynamics of GDP growth continued until 2007, reaching a peak of 13.5% in 2001, and this phenomenon was dubbed the «economic miracle» of Kazakhstan at that time. This trend was broken by the global financial crisis in 2008, which engulfed the entire world economy, and as a result of this negative impact the real GDP of Kazakhstan declined from 8.9% in 2007 to 1.2% in 2009.

Between 2010 and 2014, real GDP growth did not exceed 6% per year; during this period, growth peaked in 2011 (7.4%). The decline in world oil prices that began in 2014 led to the fact that Kazakhstan's economy, which exports large amounts of mineral resources and is highly sensitive to oil price volatility, began to experience difficulties, and the country's government and the National Bank of Kazakhstan decided to devalue the tenge. As a result, the country's real GDP declined to 1.1% in 2016.

In the next three years, real GDP growth did not exceed 4% annually until the onset of the COVID-19

related pandemic, which also made its corrections. The negative impact of the pandemic was reflected in the President's declaration of a state of emergency and lockdown, which together caused Kazakhstan's real GDP to decline to 2.6% in 2020. As Figure 1 shows, the pandemic decline in real GDP was stronger than the decline under the influence of the 2008 global financial crisis. The country's small and medium-sized businesses were hit hardest, unemployment and inflation rose, but the positive effects of the pandemic in the form of accelerating digitalization of the economy were also observed in parallel.

Analysis of the dynamics of real GDP in Kazakhstan since independence showed that, despite various negative and difficult periods in the development of the young country, it has made great efforts to ensure sustainability and a positive track of growth and development of the national economy. This is confirmed by the forecasts of international organizations such as UNCTAD, IMF and the World Bank. For example, according to the IMF forecast,

real GDP growth in Kazakhstan may reach 5.8% by 2023, although by 2025 the figure may decrease by 1-1.5% (IMF 2021).

From macroeconomic theory, we know about the close proportional relationship between investment and GDP; moreover, according to Keynesian theory, investment growth has a multiplicative effect on increasing production in the country. Nowadays Kazakhstan as well as all the rest of the world is experiencing the consequences of pandemic crisis, which require new balanced decisions and implementation of effective policy by the country's leadership. Despite the current situation in the world, connected with decrease in global flows of FDI, the urgency of attraction of foreign capital, especially in the form of FDI, is still high and growing to this day.

Trends in attracting FDI flows to Kazakhstan since independence are presented in Table 1, which calculates the share of FDI inflows by decade (World Investment Report 2021).

Table 1 – FDI inflows to Kazakhstan for the period 1991-2020, US\$ million

Indicator	1991-2000	2001-2010	2011-2020	Total
Inward FDI	9335,3	70157,8	73736,9	153230
Share in the total volume, %	6	45,8	48,1	100

A substantive analysis of the data presented in Table 1 and illustrated in Figure 2, according to the UNCTAD statistical database, shows different dynamics in FDI inflows to the country by year. In the first decade of independence, the total FDI inflow to Kazakhstan was US\$9.3 billion, in the second decade it was US\$70.2 billion, and in the third decade it was US\$73.7 billion. As can be seen from the dynamics by decades, the FDI inflow increased 7.5 times in the second decade and almost 8 times in the third decade compared to the first one. In summary, over the years of independence Kazakhstan has attracted FDI to the amount of 153.23 billion U.S. dollars (UNCTAD 2021).

These figures prove that Kazakhstan is the most attractive place to attract FDI in the Central Asian region for foreign investors, and that the government of the republic is implementing an effective policy aimed at opening the national economy to the outside world. This fact is confirmed by the positive dynamics of values of the Regulatory FDI Restrictions Index (hereinafter – FDI Index), calculated by OECD since 2003 (World Investment Report 2021). The index measures the restrictiveness of host country regulations with respect to FDI, taking into account

four main types of restrictions:

- restrictions on foreign capital;
- discriminatory screening or approval mechanisms;
- restrictions on key foreign personnel;
- operational constraints.

The FDI index was formulated by the Investment Division and the OECD Department of Economics and is used to identify trends in product market regulation policy priorities. The range of values of this index ranges from 0 to 1, with the closer the index value is to 1, the more restrictions the countries have on the activities of foreign investors, and the closer the value is to 0, the more countries are open to FDI inflows. The analysis of this index is of especial importance for Kazakhstan, since the country has set a course to join the top 30 countries of the world by 2050, in accordance with the Message of the Leader of the Nation «The Third Modernization of Kazakhstan: Global Competitiveness. Data for our Republic is presented in Table 2 (reduction of values means positive dynamics – author's note).

For comparison, in OECD countries the average value of the indicator is 0.063 in 2020, which is almost 2 times lower than in Kazakhstan. However, not all

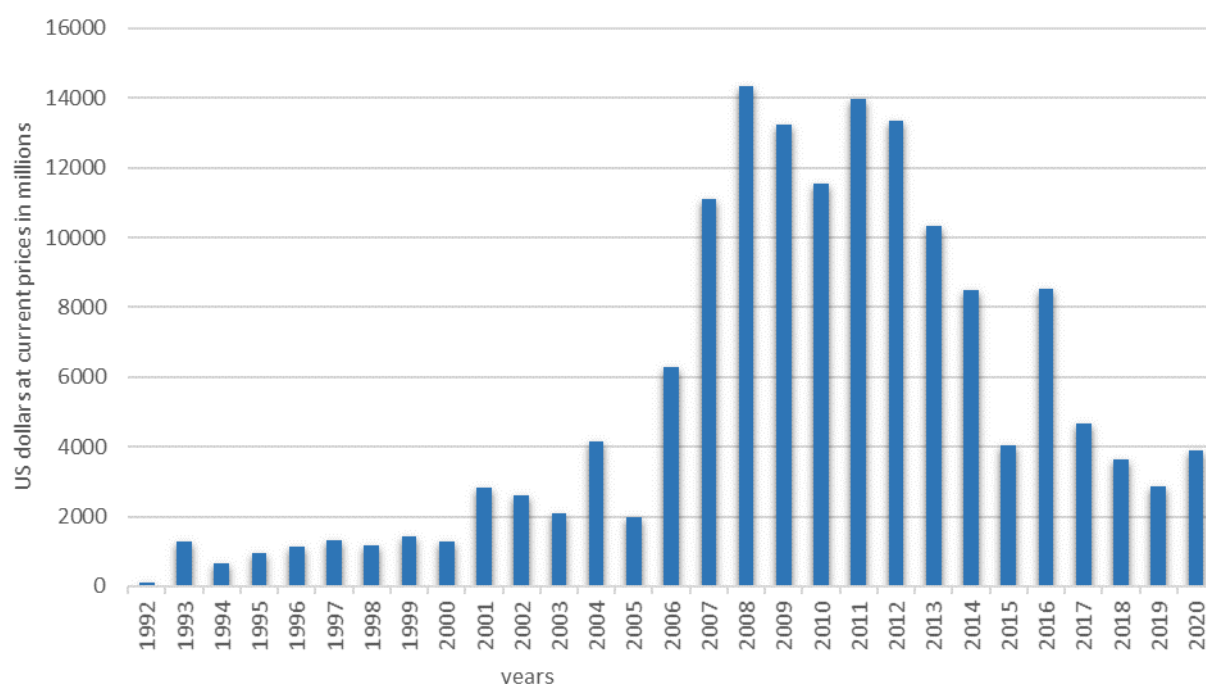


Figure 2 – Dynamics of FDI inflows to Kazakhstan since the beginning of independence, million US dollars (UNCTAD 2021)

OECD member countries are widely open to foreign investors, many of them including developed countries, have values above the average, for example, Canada has the index value – 0.162. The following countries have some of the lowest values of FDI index: Luxembourg

– 0.004, Portugal – 0.007, Romania – 0.009; Germany – 0.023, France – 0.045. In Russia the index shows a value of 0.262, double that of Kazakhstan. Among the post-Soviet countries, Armenia has the lowest index – 0.019. (World Investment Report 2021)

Table 2 – Kazakhstan's FDI Index for the period 2010-2020

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0.149	0.149	0.146	0.139	0.139	0.140	0.113	0.113	0.113	0.113	0.113

A comparative analysis of Kazakhstan's FDI Index values with other countries shows the effectiveness of government policies to deal and work with foreign investors, and in this regard our country has significant advantages, in relation to neighboring countries in the Central Asian (CA) region. It is important to know that the FDI Index is used to assess the restrictiveness of FDI policies for OECD candidate countries. As we know, becoming an OECD member country is an important and strategic goal for Kazakhstan in the future.

Kazakhstan has an absolute advantage in attracting FDI in Central Asia, as evidenced by the UNCTAD statistics database at the end of October 2021: in the period from 1992 to 2020 Kazakhstan attracted FDI totaling \$ 153.23 billion, which is 69% of the total amount of FDI in Central Asia. The

curves in the chart (Figure 3) clearly demonstrate this fact. From the beginning of independence until 2008, the rate of FDI inflows to the CA region is almost identical to that of Kazakhstan.

Based on the data on FDI inflows (in current prices, million US dollars) to the Central Asian countries as a whole and the data on FDI inflow to Kazakhstan for the period from 1992 to 2020, inclusive, the «Share of FDI inflows to Kazakhstan in total FDI in CA countries» was calculated for the specified period. The visualization of this indicator can be seen in Figure 3, which clearly shows Kazakhstan's leadership in attracting FDI among other CA countries.

President of the country K.K. Tokayev continues the active policy on stimulation of FDI in the country,

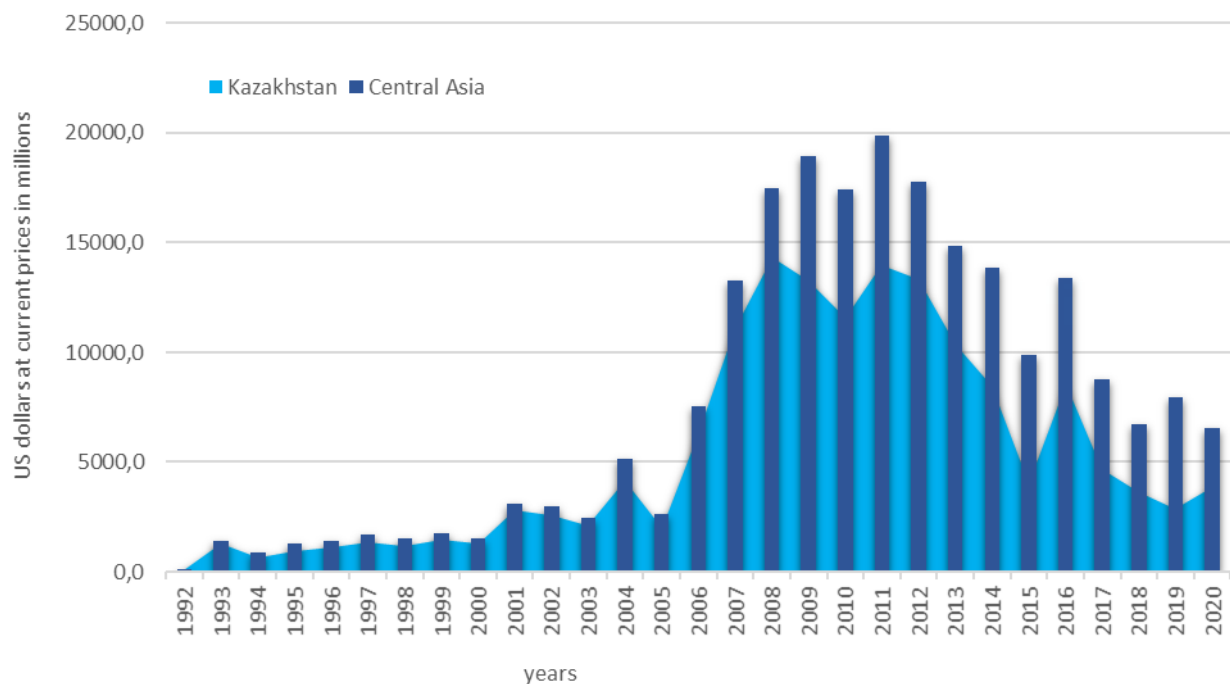


Figure 3 – Comparative dynamics of FDI inflows to Kazakhstan and Central Asia for the period 1992-2020, million US dollars (World Investment Report 2021)

outlined by Elbasy. Today the policy on attraction of FDI to Kazakhstan has undergone significant changes and has become more targeted and aimed at stimulating the inflow of FDI on the basis of a new systematic approach outlined in the National Development Plan of Kazakhstan until 2025 and in the National Investment Strategy of Kazakhstan. This approach is aimed at «further creating favorable conditions for attracting and retaining investment by increasing the level of protection of investors' rights, improving infrastructure, as well as increasing the transparency of the regulation of investment activities (National Plan 2018).

The main document in the field of FDI regulation in the republic is the state program «National Investment Strategy» (NIS GP), adopted in 2015 and later complemented by the support of such programs as «Business Road Map – 2020», National Export Strategy, Digital Kazakhstan, etc. The main operators are the Ministry of Foreign Affairs of the Republic of Kazakhstan, KazInvest NC JSC, Kazakhstan Industry and Export Center JSC (KIEC JSC), QazTech Ventures JSC.

The purpose of the National Investment Strategy of the Republic of Kazakhstan is to create a favorable investment climate and attract investment, focused on improving efficiency (NIS GP 2015). To achieve these goal three main directions were identified:

1. Improvement of the investment climate of Kazakhstan.

2. Realization of effective operational measures and development of new approaches to attraction of investments.

3. Compliance of the privatization plan and public-private partnership mechanisms with the priorities of foreign investment attraction.

Within these directions the following tasks were identified (NIS GP 2015):

- creation of favorable conditions for attracting investments;
- increase the level of protection of investors' rights;
- improvement of trade logistics and development of production and marketing relations between foreign investors and local companies
- improvement of institutional mechanisms to attract, accompany and support investors;
- forming proactive approaches to attracting and retaining investment;
- ensuring the participation of foreign investors in the privatization process;
- attracting investment in public-private partnership (PPP) projects.

All of the above tasks to date are actively implemented and have high performance, as evidenced by the data of the National Statistics Bureau of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (NSB ASPR RK 2021), which indicated in a Table 3.

Table 3 – Results of the implementation of the «National Investment Strategy» GP by 2021

Indicator	2015	2016	2017	2018	2019	2020
The volume of external investments in fixed assets of the non-resource sector of the economy, billion tenge	752	779	837	1 029	1 235	1 075
Growth, %	-	3,6	7,5	22,9	20,0	-13,0

The content analysis of the data in Table 3 shows that over the six years of implementation of GP NIS the volume of external investments in fixed capital raised by 43.0%. This is a very significant result for the national economy, indicating a gradual and consistent change in the focus of interest of foreign investors in the republic, proving the effectiveness of PPP projects and a positive trend towards diversification of the national economy. Of course, the indicator showed a decrease in 2020, which is quite explainable by the negative consequences of the pandemic crisis.

The results of the NIS GP and the clear-cut work of its main operators – KazInvest NC JSC, KCIE JSC

– are confirmed by the reduction in the FDI Index for Kazakhstan (OECD, 2021), as well as an increase in the country's position in the «Doing Business» rating. Kazakhstan, according to the results of «Doing Business-2020» report, ranked 25th in the world (WB 2021), improving its position in the ranking by 3 points, compared to 2019 (Table 4).

Out of 10 indicators taken into account by the World Bank experts, the best positions of our country are in contract enforcement (4th place in the world); the lowest values – in international trade (105th place in the world). The results of last year's ranking put Kazakhstan in first place among the EAEU member countries (NPP Atameken 2021).

Table 4 – Structure of the index of Doing Business in Kazakhstan in 2020 (WB 2021)

Indicators	DB 2013	DB 2020
Starting a Business	30	22
Dealing with Construction Permits	145	37
Getting Electricity	87	67
Registering Property	18	24
Getting Credit	86	25
Protecting Minority Investors	22	7
Paying Taxes	18	64
Trading across Borders	186	105
Enforcing Contracts	27	4
Resolving Insolvency	54	32

Analysis of the indicators of the Doing Business index for doing business in the republic makes it possible to assess the effectiveness of government measures and the implementation of adopted programs. Compared to 2013, all but two indicators have a significant decrease, which improves the country's business climate for foreign companies.

The importance of the «Doing Business» ranking is increased by the fact that since 2012 it includes the «FDI per capita» indicator, which makes it also a tool for assessing the investment climate of the country. Therefore efforts to improve the indicators in this

rating, will contribute to the growth of not only economic, but also other beneficial effects of FDI in the country. Because in a broader sense, FDI includes a full list of intangible assets: production technologies and know-how, other objects of intellectual property, managerial, marketing experience and skills, knowledge of world markets and opportunities of access to them and some others (Rakhmatullayeva 2015). This is supported by a large number of foreign empirical studies on the role of FDI in host countries, proving that it is an important source of capital, complements domestic private investment and tends to be related.

Information on foreign investors investing FDI in various economic activities in Kazakhstan is presented in Figure 4. The Netherlands (46% of total

FDI inflows), the United States (29%) and France (10%) are by far the largest direct investors (National Bank 2021).

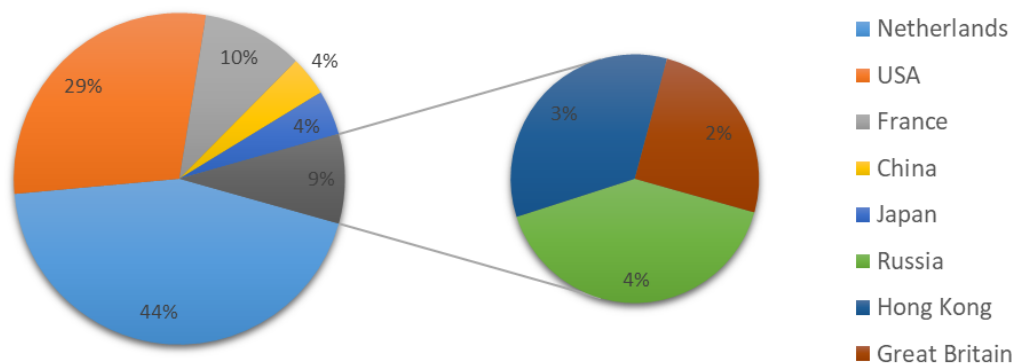


Figure 4 – Share of FDI by large investors, % (NB)

In fact, the geography of countries for FDI in Kazakhstan is very broad and includes 89 countries from

different continents of the planet. Table 4 presents 20 countries with FDI in excess of \$500 million (Table 5).

Table 5 – Geography of countries of FDI in Kazakhstan, million US dollars (NB 2021)

No	Name of countries	FDI inflows	No	Name of countries	FDI inflows
	Netherlands	60 076,0	11.	Luxembourg	1 316,2
	USA	39 492,8	12.	UAE	1 196,4
	France	13 394,1	13.	South Korea	1 176,6
	China	5 248,8	14.	Turkey	1 060,5
	Japan	5 908,5	15.	Germany	1 000,2
	Russia	4 826,6	16.	Canada	942,8
	Hong Kong	4 052,0	17.	Cyprus	938,7
	Great Britain	2 987,7	18.	Singapore	669,5
	Virgin Islands (British)	2 555,4	19.	Belgium	615,3
	Switzerland	2 255,8	20.	Bermuda (British)	548,6

As Table 5 indicates, the top 20 investors include developed countries in Europe, North America, and Asia. FDI in these countries differs by type of economic activity. It is well known that

the prevailing part of FDI is directed to the oil industry of the country, nevertheless, there are FDI inflows in other spheres of the national economy (Table 6).

Table 6 – Dynamics of growth in net FDI inflows by type of economic activity, %

Type of economic activity	2016	2017	2018	2019	2020	Change by 2019,%
Mining and quarrying	2 147,1	4 418,5	4 889,3	2 088,2	2 330,4	+11,6%
Manufacturing industry	163,5	342,5	-132,0	864,5	487,7	-43,6%
Electricity, gas, steam and air conditioning	1,6	-248,8	390,3	-40,1	78,3	+295,3%
Water supply; sewerage system, control over the collection and distribution of waste	4,6	-4,6	9,0	10,7	36,2	+238,3

Continuation of table 6

Construction	1 044,8	-138,5	234,9	462,7	386,1	-16,6%
Wholesale and retail trade; car and motorcycle repair	322,8	366,0	381,1	677,1	289,5	-57,2%
Information and communication	132,0	93,9	-423,8	-131,3	136,3	+203,8%
Financial and insurance activities	52,0	429,8	-375,9	405,7	848,7	+109,2
Real estate transactions	175,9	126,4	-120,6	8,7	-193,8	-2327,6%
Professional, scientific and technical activities	4 689,0	-22,2	266,4	375,5	-42,3	-111,3%
Administrative and support services activities	140,8	169,2	-18,9	10,3	-28,2	-373,8%
Education, health and social services, arts, entertainment and recreation	16,7	-9,0	-7,8	3,7	11,1	+200,0%
Note – the «-» sign means an outflow of investments.						

As Table 6 indicates, the volume of FDI inflows in different years varies greatly by economic activity, according to the National Bank of Kazakhstan. There are both positive and negative trends by years in different spheres, which is due to both internal and external reasons. In the years of devaluation of the national currency, the indicator of net FDI inflows in many areas of economic activity decreased compared to the previous period, and the values of the indicator in recent years were strongly affected by external shocks.

The growth of FDI in mining, transport, financial services, telecommunications and energy in 2020 has compensated for the decline in FDI inflows in construction, metallurgy and trade, which have been particularly affected by the effects of the pandemic. Most of the FDI in the country's major oil and gas sector was related to the Tengiz mega-project with Chevron (USA), which is expected to be completed by 2022. The QazTechna bus plant project was also put into operation, and the construction of the DoubleStar rubber and tire plant with Chinese capital began in 2020. In the field of telecommunications, a new international project with Russia was launched. According to macroeconomic theory, investment is the most sensitive component of aggregate demand, highly dependent on investors' optimism, the country's domestic policy, the country's vulnerability to external shocks and other reasons that increase investment risks for foreign investors.

According to the BCG, for Kazakhstan to date, the issue of foreign investor retention in the country is strategically important and so far remains a «weak» link in the overall chain of measures to deal with FDI (BCG Report 2019). Therefore, for Kazakhstan today the task is not to attract FDI, but to retain the capital of direct investors in the domestic market is more relevant, given the significant volume of repatriation of profits of foreign companies from the country. World practice proves that the multidimensional impact of FDI on the economic development of the host coun-

try depends largely on the original conditions prevailing in the national economy, on the policy of foreign investors themselves and directly on the policy with regard to FDI in the host country. At the same time it is important to note that foreign companies, to a large extent, themselves predetermine the direction of FDI behavior and its impact on the host country's economic development. Thus, this influence largely depends on the strategy of the company itself, the nature and form of its interaction with the state and domestic business. Reflection of current situation with repatriation of large volumes of profit from invested FDI is one of the important tasks of current investment policy with foreign investors in Kazakhstan, which should also contribute to the task of diversification of the national economy. In this regard, it is important to analyze the conclusions of existing theories and models of FDI and «learn lessons» from the experience of those countries that have managed to achieve a high level of economic development and increase the competitiveness of the national economy with the help of foreign capital.

Thus, for effective investment policy in the field of FDI it is necessary to constantly improve the process of state regulation of the economy, including effective measures of the state to improve the investment climate of all regions of Kazakhstan, not only raw material ones. State investment policy should provide not only attraction of FDI, but also its targeted use on strategically important innovative directions of development. All this is successfully realized in the republic today, however Kazakhstan did not avoid the negative influence of the coronation crisis, which engulfed the whole world.

Over the past two years, the global economy has been ravaged by the COVID-19 pandemic, which has caused FDI flows to decline sharply by 35% in 2020, compared to 2019. According to UNCTAD experts, this is almost 20% below the 2009 low after the global financial crisis, and the drop in FDI was much sharper than the drop in GDP and trade. It should be

noted that the pandemic crisis had a stronger impact on FDI in developed countries than in developing countries, where FDI declined by 8 percent versus 58 percent (see Figure 6). Meanwhile, the relative stability of developing countries' FDI flows was mostly

due to Asian investment (FDI inflows to China and Hong Kong actually increased by 6%), thanks to sustained economic growth, efforts to promote investment, and the ongoing liberalization of investment in these countries (World Investment Report 2021).

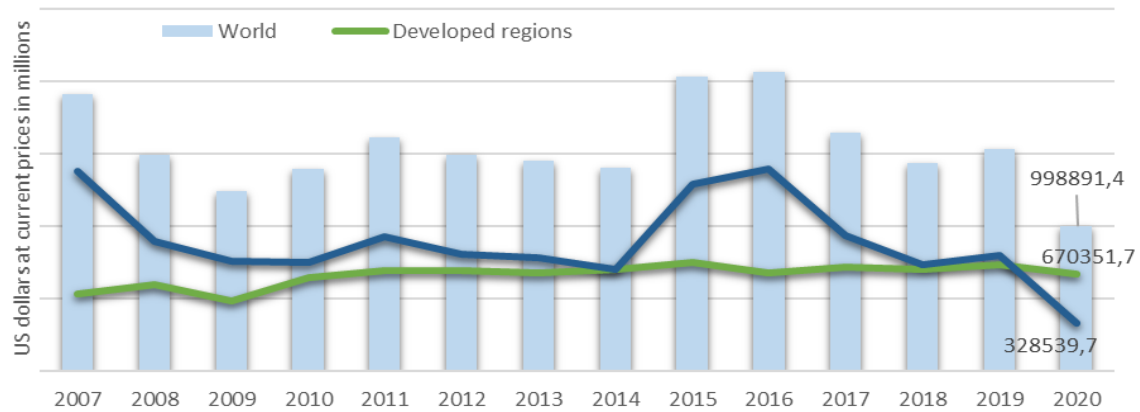


Figure 6 – Global FDI inflows by regions of the world, before and after the pandemic, million US dollars (UNCTADStat 2021)

The impact of the pandemic on global FDI was concentrated in the first half of 2020, and while certain types of FDI recovered to a large extent in the second half of the year, nevertheless investment in new projects, which are more important for developing countries, has continued its negative trend since early 2020 until now. In the transi-

tion region, including the CIS, pre-existing problems and economic sensitivities, such as heavy reliance on investment in natural resources (among some large CIS countries), have worsened. Inflows more than halved in the CIS, to their lowest level since 2003, and this drop was significantly greater than the global average (Figure 7).

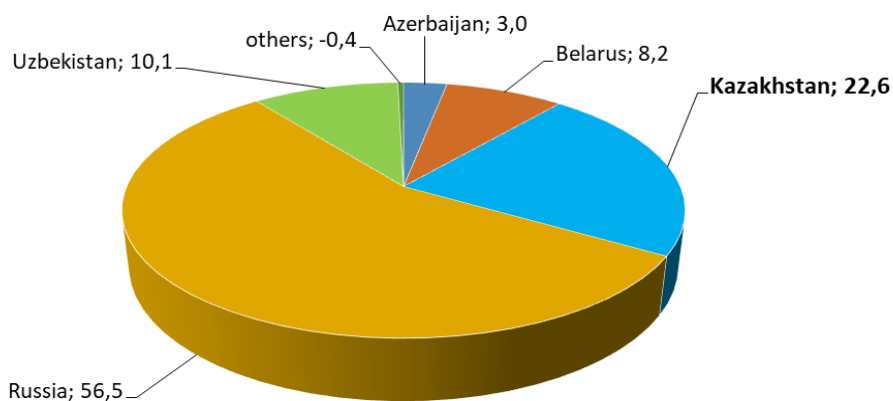


Figure 7 – The country's share of FDI inflows in the total volume of FDI in the CIS region (UNCTADStat 2021)

Although these negative trends have been observed overall, only three countries in the region registered higher FDI inflows in 2020 compared to 2019 – Kazakhstan, Belarus, and Montenegro (World Investment Report 2021).

Conclusion

According to UNCTAD experts, despite the overall decrease in FDI inflows to the CIS region, the Republic of Kazakhstan was an «exception» – FDI

inflows to the country increased by 35%. This was because Kazakhstan launched two new projects in 2020:

- A rubber and plastic products plant with an investment of \$192 million (with the PRC),
- airport terminal project with an investment volume of 244 million U.S. dollars (Netherlands-Russia).

In addition, the republic has adopted a package of measures to combat the effects of the pandemic, which includes preferential loans, support for agriculture, tax incentives, and low-interest loans and targeted financing. The point is that from the beginning of 2021 the state reimbursement of up to 20% of expenses on construction and assembly works of investment projects as well as on purchase of equipment within the framework of such projects has been introduced in Kazakhstan. Because of the introduction of these measures, procedures for public procurement at the conclusion of investment agreements have been greatly simplified. In addition, the Government of Kazakhstan offers special investment contracts for companies investing in the country's healthcare industry complex. Such companies are offered tax preferences, exemption from customs duties, state subsidies (covering up to 30% of all costs) and investment subsidies.

Thus, the situation in our republic is more optimistic relative to other CA and CIS countries (except Russia). However, despite this, it is necessary to take into account the global forecasts in the field of FDI offered by UNCTAD experts, who believe that, despite the countries' efforts to restore their economies,

a return to the pre-pandemic levels of FDI inflows in the coming years is unlikely for the following reasons (World Investment Report 2021):

- Slow economic growth rates affecting FDI inflows;
- The limitations of the pandemic, which hinder rapid diversification of the economy;
- Economic sanctions and geopolitical instability in some parts of the region.

Analysis of the experience of past recessions in FDI flows (e.g. after the 2008 global financial crisis) shows that a real recovery of investment may take a long time. Policy responses that shape the future investment landscape will be important factors. Global FDI flows are expected to increase partially by 10–15% in 2021, but this is still below the pre-pandemic period, and the outlook is bleak – a full recovery of FDI is not guaranteed, as it tends to lag other macroeconomic indicators.

To conclude, let us cite the assessments of international organizations on Kazakhstan's FDI achievements, for example, the OECD noted, «Kazakhstan's good performance in attracting FDI in a region with a higher level of accumulated investment in gross domestic product than most neighboring countries.» The U.S. Department of State in its review of the investment climate around the world notes that «Kazakhstan has made significant progress in building a market economy and has achieved significant results in its efforts to attract foreign investment» (Dodonov 2021). On this basis, the success of the National Investment Strategy implemented in the country and the results of thirty years of efforts to attract foreign capital can be called a success story of Kazakhstan.

References

- Aitken B., Harrison A. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela // *American Economic Review*, 89, 605–618 UNCTAD. (2021). Foreign Direct Investment. Retrieved 22 Oct. 2021.
- Baltabaev, B. (2014). Foreign direct investment and total factor productivity growth: New macro-evidence. *World Economy*, 37(2), 311–334
- Blalock G., Gertler P.J. (2008). Welfare Gains from Foreign Direct Investment through Technology Transfer to Local Suppliers. *Journal of International Economics*, forthcoming. 74(2), 402–421
- Blomstrom M. (2003). Multinational corporations and spillovers. *Journal of Economic Surveys*. 12(2), 1–31.
- Buchanan, B.G., Le, Q.V. and Rishi, M. (2012), Foreign direct investment and institutional quality: Some empirical evidence, *International Review of Financial Analysis*, Vol. 21, pp. 81–89.
- Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. (2021). Indicators of state programs. Investment Attraction Program «National Investment Strategy». Retrieved 22 Oct. 2021.
- David M. Kemme, Yerkezhan Akhmetzaki & Bulat M. Mukhamediyev (2021) The effects of the Eurasian Economic Union on regional foreign direct investment and implications for growth, *The Journal of International Trade & Economic Development*, 30:5, 643–660, DOI: 10.1080/09638199.2021.1896769
- Fayyaz Ahmad, Muhammad Umar Draz, Lijuan Su, Ilhan Ozturk, Abdul Rauf, Shahid Ali, (2019). Impact of FDI Inflows on Poverty Reduction in the ASEAN and SAARC Economies, *Sustainability*, 10.3390/su11092565, 11, 9, (2565).
- Gorodnichenko, Sveinar, Terrell. (2014). When does FDI have positive spillovers? Evidence from 17 transition market economies. *Journal of Comparative Economics*, 42, 954–969.
- Herman M., Chaisholm D., Leavell H. (2004). FDI and the effects on society. *Proceedings of the Academy for Studies in International Business*, 4(1), 15–18.

- Kokko A. (2003). The economics of foreign direct investment incentives. NBER Working Paper Series no. 9489. Cambridge MA: National Bureau of Economic Research.
- Kurul, Z. (2017). Nonlinear relationship between institutional factors and FDI flows: dynamic panel threshold analysis, *International Review of Economics and Finance*, 48, 148-160.
- Lehnert K., Benmamoun M., Zhao H. (2013). FDI Inflow and Human Development // Analysis of FDI's Impact on Host Countries' Social Welfare and Infrastructure. Wiley Periodicals, Inc. DOI: 10.1002/tie.21544.
- Mahmood, N., Shakil, M., Akinlaso, I. and Tasnia, M. (2019), Foreign direct investment and institutional stability: who drives whom?, *Journal of Economics, Finance and Administrative Science*, 24(47), 145-156.
- Majeed, A., Jiang, P., Ahmad, M., Khan, M. A., & Olah, J. (2021). The Impact of Foreign Direct Investment on Financial Development: New Evidence from Panel Cointegration and Causality Analysis. *Journal of Competitiveness*, 13(1), 95–112
- Nacionalnyi plan razvitiya RK do 2025 goda. (2018). Ukaz https://online.zakon.kz/Document/?doc_id=38490966 Prezidenta Respubliki Kazakhstan ot 15 fevralya 2018 goda № 636. Retrieved 20 Oct. 2021.
- Obzor investicionnoy privlekatelnosti stran Centralnoi Azii. (2019). Otchet. Samruk Kazyna. Retrieved 22 Oct. 2021.
- Programma po privilecheniyu investicii «Nacionalnaya investicionnaya strategiya». (2017). Postanovlenie Pravitelstva RK ot 22 avgusta 2017 goda № 498. Retrieved 20 Oct. 2021.
- Rakhmatullayeva, D., Bobkov, V., Zhatkanbayev, E. (2015). Modeling of the social effect of foreign direct investment in the regions of Kazakhstan. *Economy of Region*. 2, 285-300.
- Rakhmatullayeva D.Zh. (2015). Social effects of foreign direct investment in the regions of Kazakhstan. Doctoral dissertation, 183.
- Rondinelli D. (2002). Transnational corporations: International citizens or new sovereigns? *Business and Society Review*, 107, 391-413.
- Waikar, L. Jepbarova, S. Lee, L. Gardner, J. Johnson (2011) Impact of Foreign Direct Investment on Kazakhstan's Economy: A Boon or a Curse. Available from: <https://www.researchgate.net/publication/260136865>. Retrieved Nov 04 2020
- World Investment Report. Investing in Sustainable Recovery. (2021). UNCTAD. 2021. Retrieved 22 Oct. 2021.
- Yoon Choi, Jungho Baek, Does FDI Really Matter to Economic Growth in India? *Economies*, 10.3390/economies5020020, 5, 2, (20), (2017).

Internet resources

- Boston Consulting Group. (2019). Report. Central Asia. Retrieved 20 Oct. 2021
- Dodonov, V. (2021). Foreign investments in Kazakhstan: a success story. Retrieved 22 Nov. 2021
- Information and reference system of NCE «Atameken». (2021). Kazakhstan in the Doing Business Ranking. Retrieved 22 Oct. 2021
- International Monetary Fund (2021). Real GDP growth. Kazakhstan. Retrieved 20 Nov. 2021
- Poslanie Pervogo Prezidenta RK N.A.Nazarbayeva narodu Kazakhstana 14 decabrya 2012 goda «Strategiya «Kazakhstan-2050»: novyi politicheskii kurs sostoyavshegosya gosudarstva». (2012). Akorda. Retrieved 20 Oct. 2021
- National Bank of Kazakhstan. (2021). External sector statistics. Direct investments in the direction of investment. Retrieved 22 Oct. 2021
- UNCTADStat. (2021). Foreign direct investment: Inward and outward flows and stock, annual. Retrieved 22 Oct. 2021
- The World Bank. (2021). Ease of doing business in Kazakhstan. Retrieved 22 Nov. 2021

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ANALYSIS OF SINO-INDIAN TRADE AND TOURISM AS THE BASE FOR THE REVIVAL OF THEIR PARTNERSHIP

India and China are among the fastest growing emerging market economies; and have experienced rapid rise in trade and tourism in recent years. This guided the choice of the two countries for in-depth analysis.

This is a rare study which empirically explores the association of tourism, with trade, and GNP. Tourism has multi-dimensional ramifications relating to dissemination of innovation, technology, organization, and managerial techniques. These in turn promote productivity and propel growth in countries.

The paper examines the association between Sino-Indian trade and Sino-Indian tourism and the association between Indian trade and Indian tourism with the world. The following methods have been used to examine the above association: Summary statistics, innovative form of t-statistics to determine significance of difference between sample mean and median, econometric models comprising Dicky-Fuller tests and regression. Thus, the study uses Karl Popper dictum that «No theory can pass muster as finally acceptable without repeated testing with different data sets so data relating to Indian tourism and its trade relation with China and the world are used. Detailed theoretical background for specifying the relationship between the core variables has been used. The empirical analysis finds Outbound/Inbound Sino-Indian tourism to be a direct function of Sino-Indian trade while trade emerges as a function of GNP. The ratio of Sino-Indian tourism to India's world tourism has also been found to be a positive function of the ratio of Sino-Indian trade to India's world trade. Besides Indian world tourism is also a positive function of India's world trade. Therefore, both Sino India trade and India's world trade along with tourism has great potential for future growth. The study covers a period of 19 years from 2000-01 to 2018-19.

Key words: Indo-Chinese, tourism, trade, GNP, RWM, econometric-modeling.

Introduction

China and India have a long history of Trade, Tourism, and cooperation, despite the mighty Himalayas dividing the two giants. Ashok Maurya the great Indian King sent scholars, preachers, and teachers across Asia to spread Buddhism. Subsequently many Chinese scholars and travelers visited the ancient Indian universities such as Nalanda, Taxila and other Buddhist centers to study Buddhism. Gradually religious-cultural exchanges were complimented by trade relations through silk route. Eventually silk route trade gave way to full commercial and business relations (Mohan Malik, 2011), through sea-routes. There are references of these in the Song (960-1278), Yuan (1279-1368), and the early Ming dynasty (1368-1644) periods. Besides, India and China were the two most developed economies of the world till the Middle Ages which prompted Marx to eulogize Asian mode of production. Prakash, S. (2003).

India exported coral, pearls, glass, and fragrances to China, while China exported silk products to

India. This exchange was not just confined to commodities, music and dance, culture and manufacturing technology also made their way to China from south Asia. Historically peace and stability along the Silk Road, have been an important contributor to trade and prosperity.

The economic and cultural exchanges along with the great migrations caused an emergence of a complementing culture along the Silk Road. This culture covers a vast area from East Turkistan (China) to today's Turkey in the West and to India in the South. This entire belt is a melting pot of cultures, countries, religions, ethnicities, and socio-political structures. This could be the catalyst in the emergence of the Silk Road as an important sub-global economic region given its population of more than one and a half billion with median age of approximately 24 years a critical factor in economic development of any region (Rani, S., & Tuteja, G. (2015))

Sino-Indian cooperation extended into the political arena when Indian and Chinese revolutionaries joined hands with each other against the imperialist

powers like East India Company (1857-59) and the Manchu-led Qing dynasty (1644-1912) as well as the Japanese invaders in 1930's, Indurthy.,R. (2016).

Silk route trade between India and China symbolized the contribution of peaceful cooperation and collaboration for prosperity in India and China. Trade is postulated as an engine of economic growth Marshall, (1892). Trade may be interpreted in a wider sense to include softer items like language, literature, philosophy, culture, traditional modes of health and education besides commodities and finance. Effect of trade on softer items goes far beyond economic gains and has lasting effect on people and governments. Like trade, tourism also promotes growth through its multiple forms and purposes such as religious tourism, health tourism, education tourism, entertainment and holidays, and commercial tourism. The Silk Road symbolizes a complimentary identity by the fusion of cultures from the Yellow River Valley to the Mediterranean Sea (Behera.S. 2002). A study by McDermott and Mornah (2015) found culture as an important determinant of international business and a significant factor to explain the pattern of international business and the decisions to trade and invest. The above background has prompted the authors to select this topic for empirical research.

Objective of the Study

The focus of the study is to establish a link between trade and tourism which envelopes implicitly services and culture.

1. To determine the current status of Sino-Indian Trade.
2. To determine the relation between tourists, exchange and trade between China and India;
3. To estimate the linkage between trade and income between India and China.
4. To determine a link between India's global tourism and global trade

Current Sino-Indian Trade

After a brief lull in trade relations India and China officially resumed trade in 1978. Sino-Indian bilateral trade, which was as low as US\$1.8 bn in 1999-00, reached US\$72.3 bn in 2014-15, making China India's largest merchandize trading partner. In 2014-15, India's exports to China were US\$11.93 bn, whereas India's imports from China were US\$ 60.43 bn, resulting in a trade deficit of US\$48.5 bn for India. China accounts for 3.85% of India's global exports while it accounts for 13.48% of India's global imports. This trade imbalance needs correction for long term sustainability without going into payments problems or diversion of export earnings from other sources. The above statistics has further increased 2015-2019.

More than 45% of total Indian exports to China comprise primary goods like mineral fuels, cotton, copper, and rare earth while Indian imports comprise mainly nuclear appliances, chemicals, and electrical machinery from China (Panda, B. & Reddy, D., R., K. (2016). The top five export partners of India in 2019 were (USD B/Share percentage): 1. USA (54.29: Share 16.79%); 2. UAE (29.54: 9.14%); 3. China (17.28: 5.35%); 4. Hong Kong (11.48: 3.55%) and 5. Singapore (10.74: 3.32%), whereas top five import partners of India in the same year were 1. China (68.4: 14.28%); 2. USA (34.92: 7.29%); 3. UAE (30.31: 6.33%) 4. Saudi Arabia (27: 5.64%); 5. Iraq (22.1: 4.61%) (World Bank, 2019). Clearly the potential to make this trade grow is immense given the size and the growth rates of the two economies. However, the historical political legacy of the past remains an impediment to commerce.

A Study by (Rani,S & Tuteja, G., 2015) empirically found India's trade potential with China and other aggregated countries/blocks on the silk route. The trade intensity index was less than unity implying huge untapped potential of trade. They further found that trade among most countries on this route is underrepresented, as most have under 1 trade intensity (max being 1). The reason for future potential is accounted by the fact that India and China were closed economies till 1980s because of which trade was highly restricted but opening of both economies has thrown up huge opportunities for future growth. Technological advances have transformed non-tradable commodities and services like health, education, telecommunication, financial services and so on into tradable commodities. Therefore, there is huge scope for Sino-Indian trade to be diversified to include the above for mutual prosperity. It is further argued that this would provide impetus for cross border trade as envisaged in the «One road-one belt» (OBOR) concept.

Material and Methods

The study uses the following statistical methods of analysis:

a. Tools of Descriptive Statistics for assessment of current status of (i) economic development as measured by net national income, (ii) level of Indo-China trade comprising imports and exports, and (iii) Inbound and Outbound tourists to and from China to India, and the world (iv) nature and pattern of inter-temporal distribution of the values of the above variables; and

b. As the study uses time series data, three versions of Random Walk Model (RWM) in conjunction with Dickey-Fuller test of stationarity are used. Following three are the versions of Random Walk Models:

RWM without Drift

$$\Delta Y_t = \delta Y_{t-1} + u_t$$

RWM with Drift (Constant)

$$\Delta Y_t = \beta_0 + \delta Y_{t-1} + u_t$$

RWM with Drift and Stochastic trend

$$\Delta Y_t = \beta_0 + \beta_1 t + \delta Y_{t-1} + u_t$$

Where $\Delta Y_t = Y_t - Y_{t-1}$ is the first order difference of Y_t , β_0 is the coefficient of drift, $\delta = 1 + \rho$, where ρ is the root of the equation and t is time. If $\rho < 1$ and statistically significant, equation is out of unit root circle; regression estimate of the equation will yield genuine rather than pseudo results. This requires δ to be negative and statistically significant, that is, $\delta < 0$. If this condition is not satisfied, then the time series is non-stationary, and it is likely to yield spurious results.

If $\rho < 1$ and statistically significant, equation is out of unit root circle; regression estimate of the equation will yield genuine rather than pseudo results. This requires δ Type equation here to be negative and statistically significant, that is, $\delta < 0$. If this condition is not satisfied, then the time series is non-stationary, and it is likely to yield spurious results.

The study uses linear regression functions for estimating relations between dependent and independent variables involved in the system.

c. Sources of Data: The paper covers a period of 19 years from 2000-01 to 2018-19

1. World Bank and IMF,
2. Economic Survey of India and Ministry of Commerce, Govt. of India
3. China's Government Data
4. India tourism statistics

d. Policy Implications

1. For Government trade policy
2. For Tourism
3. For Businesses

The Analysis of Empirical Results is reported in the Appendix in Tables 1 and 2.

Results and Discussion

As a preliminary step of data analysis, results of descriptive statistics comprising are mean, standard error of mean s , median, standard deviation S , variance s^2 , and coefficients of skewness and kurtosis,

minimum and maximum values are analyzed. These results reflect the nature of distribution of the values of a given variable. Most of the tests of statistical analysis assume that the values of the variables are normally distributed. Therefore, tools of inferential statistics are not distribution free; results of summary statistics facilitate the evaluation of the assumption that the values of the variable are normally distributed. The assumption is tested by t statistics of the significance of the difference between the values of mean and median such as:

$$t = \frac{|\overline{Mean} - \overline{Median}|}{s/\sqrt{n-2}}$$

Results of summary statistics reflect the status of income, tourism, and trade. If the distribution is not normal it is likely to be skewed and high values are likely to be concentrated around a narrow space near mode. This may also suggest the time series may not be stationary.

The study uses the above modified t test to evaluate whether the difference between mean and median differs significantly on the assumption that mean, median and mode coincide at the midpoint of the normal distribution. This may however be verified by RWM. As the t statistics has low power and small sample spread relative to RWM the stationarity of the distribution is tested by Dickey-Fuller test also. The coefficients of skewness and kurtosis highlight whether the distribution is normal or divergent from normal. Skewed distribution is likely to be non-stationary. Stationary time series is characterized by constancy of its mean and variance, while covariance is not affected by the point at which it is calculated. This paper also assesses stationarity by RWM.

The following table contains the t statistics of exports to China, Imports from China, Total Trade with China, Departures from India, Arrivals in India and Total Tourists (India-China).

Table 1 – Descriptive statistics of Indo-China trade and tourism.

Variables	t-statistics
Exports to China	-0.1386
Imports from China	0.6562
Total Trade with China	0.4275
Departures from India	-0.3681
Arrivals in India	0.5754
Total Tourists (India-China)	-0.0783
GNP of India	0.51

t-statistic's has been developed for small samples 30 or less than 30 observations to test the significance of the difference between sample and population means or means of two independent samples from the same or different populations. However, this study has used an innovation for use of t-test. It is assumed that the distribution under consideration is normal and hence mean and median are equal. This is treated as null hypothesis so the following formula of t-statistics is used $((\text{Mean-Median}) * \text{Sqrt} (N-2)) / \text{SD}$. The calculated values of t-statistics of the time-series data are reported in the table 1. The values of t range from minimum -0.3681 to maximum value 0.6562. Besides the t statistics of GNP of India has a value of 0.51 which is statistically non-significant at 0.05 probability. As all these values are less than the

Critical value 1.96, the difference between means and medians of these variables are not significantly different. The table shows that the calculated values of t-statistics are less than the table value for 0.05 probability level. This suggests that the null hypothesis of equality of mean and median of above variables is not rejected on this evidence. It may suggest that as the sample size increases the distribution maybe predicted to converge towards normal distribution on the basis of Central Limit theorem. However, the power and sample size limitations of t distribution may not furnish conclusive evidence to conclude that the time-series data may be treated as stationary. So, the values of coefficients of skewness and Kurtosis and the results of Dickey-Fuller of Stationarity will be examined.

Table 2 – The following table contains the descriptive statistics of exports to China, Imports from China, Total Trade with China, Departures from India, Arrivals in India and Total Tourists (India-China).

Variables	Exports to China	Imports from China	Total Trade with China	Departures from India	Arrivals in India	Total Tourists	India's World Tourism	India's World Trade
Mean	578102.0666	2258611.0582	2836713.1248	0.5316	01319	0.6634	20.0749737	26984113
Standard Error	77067.5801	400461.7833	470831.5637	0.0456	0.0203	0.0654	2.29520674	4184539.9
Median	589394.1160	1980790.7580	2623942.1850	0.5493	0.1195	0.6689	18.77	22151910
Standard Deviation	335929.7935	1745572.4440	2052307.2057	0.1989	0.0885	0.2853	10.0045742	18239986
Sample Variance	112848826148.2390	3047023157158.8100	4211964866729.4500	0.0396	0.0078	0.0814	100.091506	3.327E+14
Kurtosis	-0.6886	-1.4819	-1.4175	-1.3504	-1.2570	-1.4108	-0.98664016	-1.517473
Skewness	0.1579	0.2268	0.1703	-0.1552	0.2130	-0.0784	0.4112	0.184129
Minimum	45400.3600	97119.2400	142519.6000	0.2089	0.0139	0.2228	7.1	4296630
Maximum	1176733.1480	4922361.6540	6093683.9240	0.8190	0.2820	1.0660	37.85	59024010

The above tables show that the value of average exports to China is only about 25% of imports from China. India has been having an adverse trade balance with China on an year-on-year basis and the mean value of total trade with China is 28367131 million. The mean number of Indian tourists arriving from China is only 24% of the total departures in India from China. Total India-China tourism is 0.66 million. The above mean values of trade and tourism imply there is great potential for future growth of Sino-Indian trade and Tourism in order to correct the balances.

On an average India's total tourism is 20.07 million persons. It means that Sino-Indian tourism is only 3.3% of India's world tourism. Mean value of India's world trade is INR 26984113.16 million. Indo-Chinese trade is 10.5% of India's world trade.

Calculated values of t-statistics of World Tourism and World Trade are 0.537 and 1.092. This evidence suggests that the null hypothesis under test that mean equals median cannot be rejected. Besides as the sample size increases, the distribution may converge towards normality as predicted by Central Limit Theorem. So, the time-series maybe on this basis expected to be stationary. However, the power of t-test is low, and its sample spread is small. Therefore, this test is not very powerful. So, the stationarity will be tested by Dickey-Fuller test. This is supported by the values of the coefficients of Skewness and Kurtosis. The coefficient of Skewness of World Trade 0.41 and World Trade is 0.18. Both these values are not statistically significant. Coefficients of Kurtosis of World Trade and World Trade are -0.98 and -1.51. Thus, the coefficients of Kurtosis

sis and Skewness suggest that the distributions are neither skewed significantly nor are these concentrated in and around modal values. These results are in consonance with the results of t-statistics.

Discussion of Coefficients of Skewness & Kurtosis of the above core variables. exports to China, Imports from China, Total Trade with China, Arrivals in India, India's world trade and India's world tourism and the values range from 01.15 for exports to China to 0.41 for India's world tourism. Therefore, the distribution of these variables is neither positively nor negatively skewed and hence it may converge to normal distribution, These results are in consonance with the results furnished by t-statistics of these variables. But the coefficients of skewness of Departures from India and Total Tourists are negative, and the values are -0.07 and -0.15; these values are greater than -1. Hence the distribution of Departures from India and Total Tourists are negatively skewed and diverge from normal distribution. These two series maybe is non-stationary.

The coefficients of kurtosis of all the variables are negative but the coefficients of Arrivals in India and India's world Tourism. These variables are less than 1 hence the high values are concentrated in and around the narrow modal area. But the high values of all other six variables tend to be concentrated around the area around the mode. This suggests the distribution of these variables may also diverge from normal distribution. Thus, the coefficients of skewness and kurtosis taken together that the distributions may diverge from normal distribution which are dissonance from results of the results t statistics. As has already been pointed out power and sample of t statistics is low and sample spread is small. Thus, the above results are not surprising which suggests need for application of RWM to detect stationarity or non-stationarity of sample distribution.

Table 3 – Results of Summary statistics of GNP of India

\$ GNP	
Mean	1527.536
Standard Error	174.953
Median	1505.735
Mode	# N/A
Standard Deviation	762.6024
Sample Variance	581562.4
Kurtosis	-1.12154
Skewness	0.187499
Range	2408.589
Minimum	485.4426
Maximum	2894.031
Sum	29023.18
Count	19
t-statistics	0.51214

The average GNP of India is USD 1527 Billion. The coefficient of skewness is positive but less than 1. So the distribution is not skewed. The negative coefficient of kurtosis is less than -1 which is also non-significant at 0.05 probability. The GNP ranges from a minimum of 485.4 B USD to a maximum of 2894 B USD. Thus, the variation of GNP between the years is quite high. This inference is also supported by a high value of variance.

Results of Random Walk Model and Dickey Fuller Test: Export, Import and GNP

i. Exports and imports from/to India

Table 4 contains the OLS estimates of RWM of Imports and Exports from/to India

Table 4 – RWM Summary of Exports and Imports from India

Random Walk		Statistical Value
Imports without constant (India)	$\widehat{\Delta imp}_t = 0.068 imp_{t-1} \quad (1)$	t = 1.61 R ² = 0.189 F = 2.89
Imports with constant/drift (India)	$\widehat{\Delta imp}_t = 9800.01 - 0.157 imp_{t-1} \quad (2)$	t = 2.81 and -1.76 R ² = 0.20 F = 2.10
Exports without Constant (India)	$\widehat{\Delta Exp}_t = -0.0050 Exp_{t-1} \quad (3)$	t = -0.07 R ² = 0.00061 F = 0.0091
Exports with constant (India)	$\widehat{\Delta Exp}_t = 5821.05 - 0.39 Exp_{t-1} \quad (4)$	t = 2.6 & -2.01 R ² = 0.893 F = 3.95

The first two RWM equations without drift and with drift show the positive and negative coefficients of lagged imports to be statistically non-significant indicating the equation to be out of unit web. These inferences warrant assessment of validity of RWM with drift and stochastic trend. The equation shows that the coefficient of lagged imports emerges as negatively significant; So, the time series of imports may be taken to be non-stationary. Next stationarity of time

series of exports of India to China is examined. The third equation depicts the equation to be out of unit root circle, as the negative coefficient of lagged exports is not significant. The coefficient of lagged exports is statistically significant. Besides the significant coefficient of time shows the existence of stochastic trend in the series of data. So, the series of exports and imports are non-stationary. Therefore 3rd version of the equation (with drift and stochastic trend) is unwarranted.

ii. GNP Random walk model

Table 5 – GNP Random Walk Model

Random Walk Model	Equation	Statistical Value
GNP without constant	$\widehat{\Delta GNP_t} = 0.1195 GNP_{t-1} (5)$	t = 11.88 R ² = 0.901 F = 133.42
GNP with constant	$\widehat{\Delta GNP_t} = 494799.81 + 0.0621 GNP_{t-1} (6)$	t = 2.97 & 2.86 R ² = 0.45 F = 7.77
GNP with drift & stochastic trend	$\widehat{\Delta GNP_t} = 1347893.15 + 298381.02t - 0.289 GNP_{t-1} (7)$	t = 3.97, 2.83, -2.72 R ² = 0.718 F = 9.99

The roots of the first two equations in Table 2 are statistically a bit greater than 1, indicating the time series of GNP to be non-stationary. Introduction of stochastic trend with drift in the function transforms the sign of the coefficient of lagged GNP from positive to negative which is statistically significant.

The above results have paved the way for the estimation of India's exports and imports as a

function of GNP. A country's exports grow with its economy; growth of output throws up ever increasing exportable surplus. Imports have to be paid for out of export earnings which also arise from growth of GNP. Therefore, both exports and imports are treated as a positive function of GNP. Results of these functions are discussed below.

iii. Inter-relations between exports/imports and GNP

Table 6 – Inter-relations of exports and imports and GNP

Regression	Equation	Statistical Value
Imports as a function of GNP	$\widehat{Yimp_t} = 3035.4 + 0.0044 GNP_t (8)$	t = 0.78 & 10.01 R ² = 0.88 F = 83.78
Exports as a function of GNP	$\widehat{Yexp_t} = 9239.65 + 0.00022 GNP_t (9)$	t = 3.93 & 1.89 R ² = 0.97 F = 2.67

Imports as a function of GNP fits the data well as 88% of total variation in imports over the years is explained by the function. The coefficient of correlation and regression are statistically significant. Corresponding to 1 billion USD increase in GNP imports increase by 4.4 million USD. The function of

exports fits the data well the explained proportion of variation of exports is 97% of total annual change. It means that random factors explain only 3% proportion of total variation. Correlation and regression coefficients statistically significant. Corresponding to 1 billion increase in GNP the exports increase by 0.22

million USD. Thus Indian exports to China are much less responsive to change in GNP than Indian imports from China.

It is probable that very few Indian export goods are required by the Chinese economy, or the exportable surplus produced by Indian industries is not sufficiently changing through time. Policy bottlenecks may also constrain exports. Alternatively the prices of Indian exports may be much lower than those of imports. This may be one factor which may explain continuously high trade imbalance of India with China. Policy makers have to find out the solution to this problem and more intensive research may be required; it is probable that the current emphasis on Make In India may affect Indian exports to China positively. This means low complementarity accounts for inability of India to export such goods to China which it needs. It indicates the urgent need for diversification of India's trade with China. This is warranted even otherwise in view of the fact that the trade balance is highly favorable to China. The

import policy of China vis a vis India may need to be adjusted to address this issue.

Results of Random Walk Model and Dickey Fuller Test: Indo-China tourism

Tourism as an industry comprises total number of tourists coming to and going from India to all countries of the world, while Sino-Indian tourism comprises incoming and outgoing tourists from India to China. Tourism involves expenditure on (i) inter-country and within country travel, (ii) boarding and lodging, and (iii) purchases of goods and services by the tourists. The paper considers only the number of tourists coming to and going out of India to all countries of the world and in and outgoing persons from India to China. This limitation is due to data difficulties relating to composition of expenditure by tourists. First part of this section provides importance of Indo-China tourist trade relative to India's global tourist trade during 2006-2016.

i. RWM Indo-China Tourism

Table 7 – RWM Indo-China tourism (2006-2016)

India		
Arrival without Drift and Without trend (from China to India)	$\Delta \widehat{ACI}_t = 0.11ACI_{t-1}$ (10)	t = 5.01 R ² = 0.691 F = 23.61
Arrival with Drift (from China to India)	$\Delta \widehat{ACI}_t = 6988.05 + 0.0586Y_{t-1}$ (11)	t = 0.60 & 1.55 R ² = 0.0838 F = 0.589
Arrival with Drift and Trend (from China to India)	$\Delta \widehat{ACI}_t = 41912.2 + 11951.25t - 0.669ACI_{t-1}$ (12)	t = 1.61, 1.45 & -1.43 R ² = 0.225 F = 1.75
Departure without drift and without trend From India to China	$\Delta \widehat{DIC}_t = 0.0444DIC_{t-1}$ (13)	t = 2.81 R ² = 0.431 F = 7.81
Departure with Drift From India to China	$\Delta \widehat{DIC}_t = 64235.16 - 0.049DIC_{t-1}$ (14)	t = 1.09, & -0.67 R ² = 0.0289 F = 0.35
Departure with Drift and Trend From India to China	$\Delta \widehat{DIC}_t = 337040.5 + 32898.6t - 0.9502DIC_{t-1}$ (15)	t = 2.68, 2.43 & -2.96 R ² = 0.409 F = 2.99

The above three equations of arrivals of tourists in India from China furnish contradictory results. The coefficient of lagged tourists in first equation is highly significant statistically while the coefficients of lagged arrivals in other two equations are not significant. The last equation also indicates absence of stochastic trend. To be on safer side for avoiding spurious results this series is considered nonstationary.

The first and third equations of this set show the coefficients of the lagged departures of tourists from India to be highly significant statistically. Besides the third equation also indicates the existence of stochastic trend, so the series is taken to be non-stationary.

Total Trade: Total Sino-Indian Tourism as a function of Total Sino-India Trade

As the time series of core variables has been revealed to be non-stationary by the Dickey Fuller test,

Engel Granger test of co integration has been applied to assess the genuine nature of results furnished by the regression models. Total Tourists from /to China are treated as a function of Indian Imports/Exports to China. OLS estimates are reported hereunder.

Regression equation: Total Tourists

$$(t) = 0.2732 + 1.37E-07 \text{ Total Trade } (t), R^2 = 0.97, \\ F = 788.79, P = 1.0975E-15 \text{ t: } (16.08) (28.05) \\ D-W: d = 2(1-0.253) = 1.49 \text{ Root: } 1-0.153 = 0.84 < 1$$

The function fits the data well and it explains 97% of total variation to outbound tourists to China.

Coefficients of correlation and Regression are statistically significant at 0.05% probability corresponding to 1mn increase in Trade increase in Sino-Indian tourists is 1.37E-08 E-08 millions. The function is free from autocorrelation as Durbin-Watson statistic is not significant at 0.01% probability. Root of the equation is less than 1 as per Tau test. Thus, the variables are well co-integrated as required Engel-Granger test of co-integration.

Inbound; Sino-Indian Tourism as a function of Sino-India Trade (Imports)

Inbound Tourists from China are treated as function of Indian Imports from China. OLS estimates are reported hereunder.

Regression equation: Inbound Tourists

$$(t) = 0.0189 + 4.99E-08 \text{ Indian Imports}(t), \\ R^2 = 0.97, F = 617.509, P = 8.38 E-15 \\ \text{t: } (3.33) (24.89) D-W: d = 2(1-0.14) = 1.72 \\ \text{Root: } 1-0.17 = 0.83 < 1$$

As the earnings from tourists from China maybe used to pay partially Import bills from China so the inbound tourists have been regressed on Imports from China. The function fits the data well and it explains 97% of total variation to outbound tourists to China. Coefficients of correlation and Regression are statistically significant at 0.05% probability corresponding to 1mn increase in exports increase in Inbound tourists is 4.99 E-08 millions. The function is free from autocorrelation as Durbin-Watson statistic is not significant t at 0.01% probability. Root of the equation is less than 1 as per Tau test. Thus, the variables are well co-integrated as required Engel-Granger test of co-integration.

Outbound: Sino-Indian Tourism as a function of Sino-India Trade (Exports)

Outbound Tourist to China is treated as function of Indian Exports to China. OLS estimates are reported hereunder.

Regression equation: Outbound Tourists

$$(t) = 0.2214 + 5.36 E-07 \text{ Indian Exports } (t), \\ R^2 = 0.82, F = 77.89, P = 9.34 E-08 \text{ t: } (5.48) (8.82) \\ D-W: d = 2(1-0.165) = 1.67 \text{ Root: } 1-0.371 = 0.63 < 1$$

As expenses of outbound tourists are met from Export earnings, outbound tourists are regressed on Indian exports to China. The function fits the data well and it explains 82% of total variation to outbound tourists to China. Coefficients of correlation and Regression are statistically significant at 0.05% probability corresponding to 1mn increase in exports increase in outbound tourists is 5.36 E-07 millions. The function is free from autocorrelation as Durbin-Watson statistic is not significant t at 0.01% probability. Root of the equation is less than 1 as per Tau test. Thus, the variables are well co-integrated as required Engel-Granger test of co-integration.

Sino-Indian Tourism – World Tourism Regression

$$\text{Sino-Indian tourism / World Tourism} = 0.035406 + 6.56E-11$$

$$\text{Sino-Indian Trade/World/Trade,} \\ R^2 = 0.8349, F = 75.8894, P = 2.97E-07 \\ \text{t} = (150.97) (8.71) \\ D-W: d = 2(1-0.1606) = 1.67 \\ \text{Root} = 1-0.232 = 0.77 < 1$$

The regression of Sino-Indian Tourism as a proportion of World Tourism on Sino-Indian trade as a proportion of World Trade, fits the data well; The equation explains 83.49% of total change in the dependent variable. Coefficient of correlation and coefficient of independent variable are statistically significant. The function is free from the malady of autocorrelation as a Durbin-Watson d statistics is significant at 0.01 probability. Besides the root of the equation 0.77 is less than 1 and statistically significant as per Tau test. Thus, the variables of the equation are well co-integrated as per Engel-Granger Test. Hence the results are genuine. Corresponding to 1 unit change in independent variable the Sino Indian tourism as a proportion of India's world tourism changes by 6.5 units.

Table 8 – Sino-India and India-World Tourism 2001-2019

Year	Dep/Outbound total Indians departing to all worlds (millions)	Total No dep/outgoing from India to China (millions)	Arr/Inbound total foreigners in India (millions)	Total No Arr/inbound from China to India (millions)	Total Indians dep/outbound + foreign arr/inbound/from/to world (millions)	Total tourist to/from China/India (millions)	Indo-China tourism as proportion of India/s world tourism
2001	4.56	0.209	2.54	0.014	7.1	0.223	2.795
2002	4.94	0.239	2.38	0.015	7.32	0.254	3.076
2003	5.35	0.272	2.73	0.021	8.08	0.293	2.960
2004	6.21	0.311	3.46	0.034	9.67	0.345	2.795
2005	7.18	0.355	3.92	0.048	11.10	0.403	2.833
2006	8.34	0.405	4.45	0.062	12.79	0.467	2.874
2007	9.78	0.462	5.08	0.088	14.86	0.551	2.925
2008	10.87	0.437	5.28	0.098	16.15	0.535	3.059
2009	11.07	0.449	5.17	0.100	16.24	0.549	3.141
2010	12.99	0.549	5.78	0.120	18.77	0.669	3.247
2011	13.99	0.606	6.31	0.142	20.3	0.749	3.217
2012	14.92	0.610	6.58	0.169	21.5	0.779	3.267
2013	16.63	0.677	6.97	0.175	23.6	0.851	3.386
2014	18.33	0.710	7.68	0.181	26.01	0.891	3.387
2015	20.38	0.731	8.03	0.206	28.41	0.937	3.538
2016	22.03	0.751	8.80	0.251	30.83	1.002	3.503
2017	23.94	0.799	10.04	0.251	33.98	1.050	3.384
2018	26.3	0.819	10.56	0.247	36.86	1.066	3.491
2019	26.92	0.709	10.93	0.282	37.85	0.991	3.463

Total Indo-China Tourism and Trade relative to India's world tourism and world trade (ICP WTr): World tourism as a function of world trade of India.

$$\begin{aligned} \text{World Tourism (t)} &= 5.82 + 5.28\text{E-}07 \\ \text{World Trade(t), } R^2 &= 0.9263, \\ F &= 213.714, P = 4.65\text{E-}11 \\ t &= (4.99) (14.61) \\ D\text{-}W: d &= 2 (1-0.24) = 1.52 \\ \text{Root} &= 0.84 < 1 \end{aligned}$$

The above function fits the data of India's world tourism and India's world trade well. As the function explains 92.6 % of the total variation in India's tourism over the years. The coefficients of correlation and regression are statistically significant at 0.05 probability. The function is free from autocorrelation since DW (d) is not significant at 0.01 probability. Besides less than 1 value of the root of the equation is not significant according to the critical value of Tau-test. Hence the variables of the equation are well cointegrated as per Engel Granger test. The regression results are genuine and hence acceptable.

The above analysis lends credible support to the thesis of this study that tourism and trade are closely related (positively) to each other. However, this initial thesis may need further testing with data of countries other than data of India and China, which constitutes the base of this study. This is suggested in accordance with Karl Poppers dictum that the theory should be repeatedly tested with different data sets for final acceptance.

Findings and Conclusion

a. Distribution of the values of GNP, Exports, Imports, Total Trade, Inbound/Outbound tourists are not found to be either skewed or concentrated in few years as per the descriptive statistics. This suggests the distribution to be approximately normal and time series to be stationary. However, these inferences are rejected by the more powerful and direct Dickey Fuller test of stationarity of time series.

b. Imports exports and total trade of India with China are found to be a positive functions of GNP

c. Tourists-Inbound/Outbound and their sum are a direct function of total commodity trade. However total tourist trade of India with China as a proportion of world tourist and commodity trade are positively related. But the results suggest that there is scope for accelerated growth of both tourism and trade of India with China and the world. The study quantifies the degree and direction of relationship between Sino-Indian tourism, trade, and GNP as well as the tourism, trade with the rest of the world. The study has

formulated an innovative thesis that trade, GNP and tourism are positively related with each other.

The objectives of the study outlined in the paper have been realized by the findings of the empirical investigation.

Scope for further research

The thesis may be tested empirically with data of other countries by other researchers.

References

- Bashir S. (2007). Trends in International Trade in Higher Education: Implications and Options for the Developing Countries. World Bank, Washington, USA.
- Indurthy, R. (2016). India and China: Conflict, Competition, Cooperation, and Prospects For Peace. *International Journal on World Peace*, 33(1), 43–108. <http://www.jstor.org/stable/45014321>
- Kinlock R. (2011). Study Abroad Statistics: Convincing Facts and Figures. Retrieved from <https://smart.study/blog/46-study-abroad-statistics-convincing-facts-and-figures/>
- Mac-Dermott, R. and Mornah, D. (2015) The Role of Culture in Foreign Direct Investment and Trade: Expectations from the GLOBE Dimensions of Culture. *Open Journal of Business and Management*, 3, 63-74. doi: 10.4236/ojbm.2015.31007.
- Malik M. (2011). China and India Great Power Rival., Boulder: First forum Press, XIV, Chicago, US.
- Panda, Bibekananda and Reddy, D. Rama Krishna (2016), Dynamics of India-China Trade Relations: Testing for the Validity of Marshall-Lerner Condition and J-Curve. *The IUP Journal of Applied Economics*, Vol. XV, No. 1, January 2016, pp. 7-26, Available at SSRN: <https://ssrn.com/abstract=2773468>
- S. Prakash. (2011). Globalization, Privatisation and Liberalization of Indian economy— ICSSR, New Delhi, India.
- S. Rani, G. Tuteja. (2015). Revival of Silk Route: An Era of Opportunities and Challenges, *Business Perspectives*. Vol.14 (1). pp. 40–62.

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IMPACT OF THE PANDEMIC ON DIGITAL MANAGEMENT: A BYBLIOMETRIC ANALYSIS

Digital management is developing every year. The number of studies related to digital management is also increasing. Digital management contributes to the development of new markets and sectors of the economy, stimulates innovation and ensures productivity growth. It also brings significant changes to the organization, its processes and all areas.

Using tools and trends in digital management, many foreign organizations are making great strides. In the context of continuous information development, managers need to process large volumes of external information and use digital governance tools to stay on top of innovation. The use of digital management tools opens up new opportunities for all organizations and allows to create business processes taking into account an actively changing environment.

Currently, we can observe how digital transformation is taking place in all areas. The purpose of this research work is to conduct a bibliographic analysis of the digital management literature.

The research consists of two stages: descriptive – bibliographic analysis and content analysis. The research work analyzes and compares studies conducted in 2017-2019 and 2020-2021 related to digital management. A review of digital management research based on Scopus is carried out. In general, 1682 studies in the field of digital management were analyzed for 2020-2021. Their indicators were described by the program VosViewer. In addition, the worldwide pandemic has also had a significant impact on the development of digital management. In this regard, 49 conducted research works were identified. In the future, digital management research still needs to be deeply studied.

Key words: digital management, digital transformation, digital technologies, COVID-19.

Introduction

The use of digital technology has included in many organizations. There are many advantages to using modern technology. This allows organizations to greatly simplify their work and increase the speed of work. However, the application of such technologies must be carried out through an appropriate management process. The development of digital management is associated with the digitalization transformation of all industries in the world. Even in many countries great attention is paid to digital transformation, many programs and projects are being created.

In December, 2019, Wuhan, Hubei province, China, became the centre of an outbreak of pneumonia of unknown cause, which raised intense attention not only within China but internationally. By Jan 7, 2020, Chinese scientists had isolated a novel coronavirus (CoV) from patients in Wuhan (Wang, et al., 2020).

The pandemic, which is now widespread around the world, has also had its impact in accelerating this digital transformation. Organizations have begun to actively deploy many digital tools to continue their work.

To maintain productivity and efficiency, COVID-19 has impacted the immediate adoption of digital technologies that accelerate communication, data collection, research and development and management by millions of people, students and employees (Kamal, 2020).

In line with the new changes caused by the pandemic, research has begun to facilitate changes in companies and find alternative solutions (Car-racedo, 2020).

Accordingly, the aim of the article is to examine how the pandemic has impacted digital management using bibliographic network analysis.

Research questions

RQ 1 Has there been a change in scientific publications and digital management literature due to the pandemic?

RQ 2 What areas of research have emerged since the start of the pandemic?

Literature review

Digital management is the provision of publicly available types of assistance based on uniformity and equality between people through electronic means at

any time and in any place, the management of structurally complex systems based on new knowledge, the solution of new problems and the use of special software (Al-Thoblany, 2021, Solozhentsev, 2020).

Digital management is understood as an enterprise management system created based on new digital technologies (or at least with their use) and capable of ensuring an increase in the efficiency and effectiveness of financial and economic activities of an enterprise and obtaining new economic benefits that are not fully available when using traditional systems and methods of management (Mikhnenko, 2020).

Even before the Covid-19 pandemic, digital technologies and their usefulness in the business environment aroused great interest. However, this interest has intensified with the advent of COVID-19. The pandemic has necessitated an increase in the use of digital devices. The widespread use of modern digital technologies raises awareness of their importance in society, especially for business purposes (Ratten and Jones, 2021).

While the pandemic is affecting the development of digital use, working digital may not bring lasting benefits to organizations.

An analysis of the use of digital technologies during a pandemic was carried out using multi-wavelength data collected through a survey of managers and employees of the hospitality industry in China. According to the study, the authors noticed that if digital governance is not properly managed, it will have a negative impact on organizations (Chadee et al., 2021).

Mora Cortez and Johnston used the TIU method in their research work, conducting a survey that included ideas that several participants considered relevant and how they relate to each other. As a result, an overwhelming majority of respondents admitted that digital transformation was relatively underdeveloped

due to the pandemic in their companies (Mora Cortez and Johnston, 2020).

There are also studies on the importance of digital management tools in the fight against the pandemic. According to Bernd W. Wirtz, digital technology offers innovative, unprecedented and revolutionary opportunities to prevent the spread of a pandemic and manage an emerging crisis. However, some countries still rely on non-digital methods that are not up to date. This creates problems with detection, virus tracking, reporting, information sharing and resource management processes that may not be able to withstand the global spread of the pandemic (Wirtz et al., 2020).

The pandemic has demanded the digital transformation of all industries. The challenges posed by COVID-19 have begun to be addressed with digital tools. However, a lot of research is still required to find out how the COVID-19 pandemic can take digital thinking. In addition, additional research related to politics and the public can more accurately determine the impact of the COVID-19 crisis (Ratten, 2021).

The purpose of the article is to detect changes in research on digital management since the beginning of the pandemic. By reviewing the literature, it turned out that there are very few authors who have studied this topic.

Methodological approach

This article is a review of the digital management literature. The bibliometric analysis was conducted using data from the Scopus database. The general database contains 102331 studies of digital management. The first paper related to digital management on the Scopus database was published in 1979.

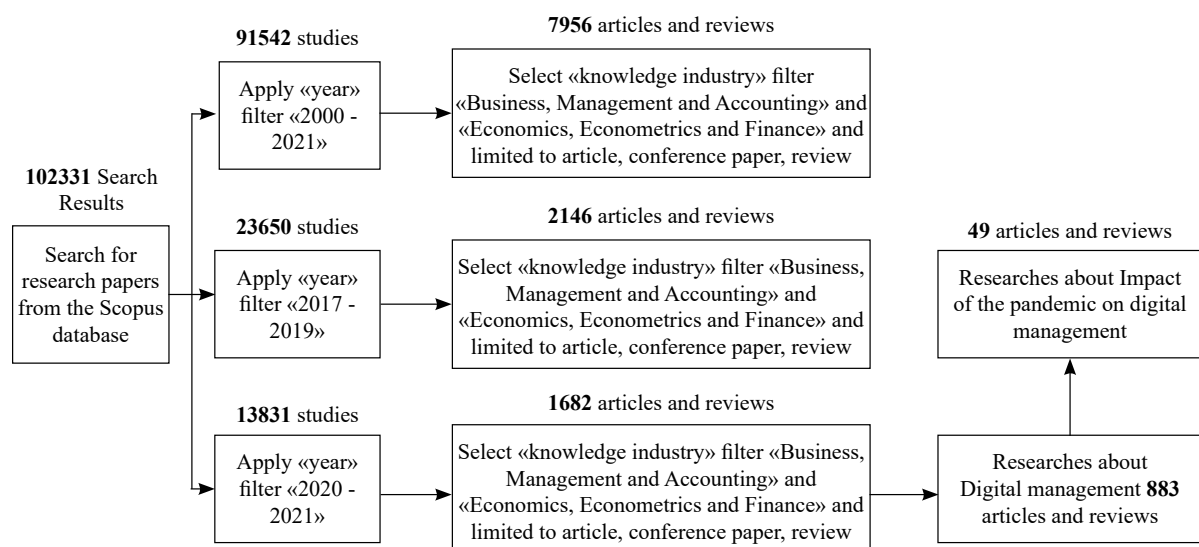


Figure 1 – Digital management research analysis scheme

Research consists of 2 stages:

1 descriptive – bibliographic analysis. There are 2 time slots selected: 2017-2019 and 2020-2021. The reason we chose this time frame is to determine what changes have occurred in digital management research since the beginning of the pandemic.

First of all, we need to determine the level of development of digital management research based on Scopus. To do this, we can choose the period between 2000 and 2021 and see how the number of digital management research will grow every year.

We consider articles in the Scopus database in 2017-2019 and 2020-2021 by knowledge industries and chose Business, Management and Accounting and Economics, Econometrics and Finance.

We also compared countries that have conducted digital management research.

We were looking for the items on digital management for 2017-2019 and 2020-2021. Based on the results, items analysis was carried out through the Vos Viewer.

2 content analysis – After sifting 1682 articles, we have selected 883 articles that are directly related to the topic. Of all the research papers on digital management, 49 articles were identified on the impact of the covid-19 pandemic on digital management.

Results

Results of the bibliographic analysis

We selected 2000-2021 to monitor the development of digital management researches every year and determined how much research was conducted based on Scopus during this period. During this period, 91542 research papers were written. 7956 of them are related to the Business, Management and Accounting (7458) and Economics, Econometrics and Finance (1435) industries.

We can see that the amount of digital management researches increasing every year.

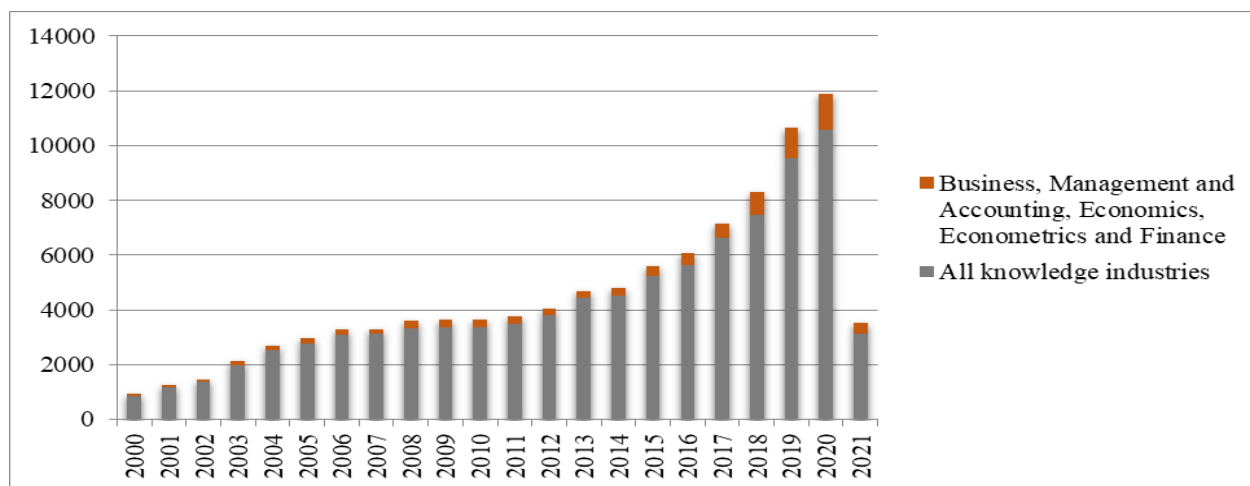


Figure 2 – Development of research on digital management

In 2017-2019, 23650 digital management-related studies were conducted. The vast majority of them were conducted in the fields of Computer Science 10481, Engineering 7910, Medicine 3493. In the Business, Management and Accounting 2304, Economics, Econometrics and Finance 491 researches were conducted.

In 2020-2021, 13831 studies were conducted. The most frequently studied areas are Computer Science (5238), Engineering (4555) and Medicine (2394). In addition, research was conducted in the fields of

Business, Management and Accounting (1501) Economics, Econometrics and Finance (382). We can see that there is not much difference in the studies conducted between the two stages.

The country with the largest number of studies in 2017-2019 is the Russian Federation. There were 301 studies conducted in this country. Also, the top-10 research countries include the United States (261), Germany (224), United Kingdom (179), China (126), India (112), Italy (99), Australia (86), Indonesia (69), and France (66).

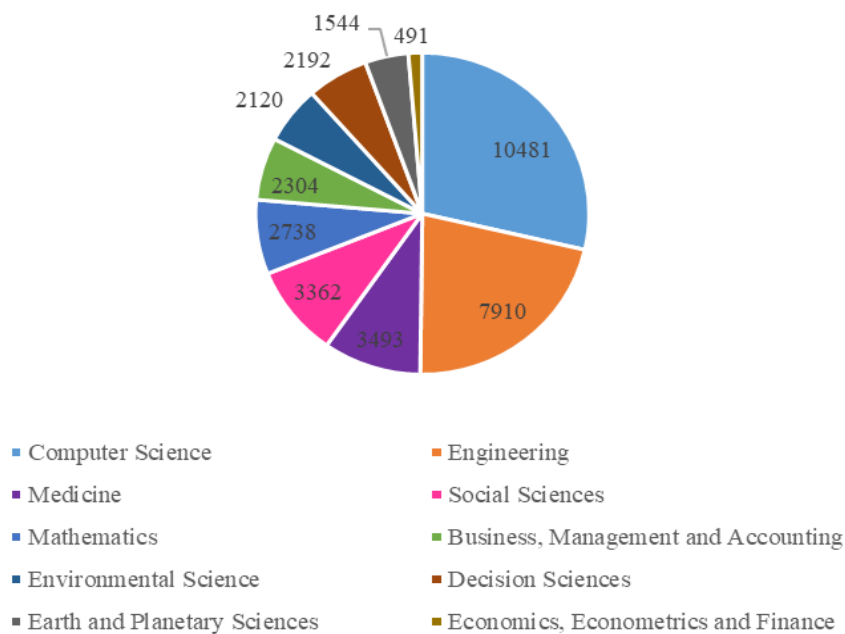


Figure 3 – Research areas of Digital Management in 2017-2019

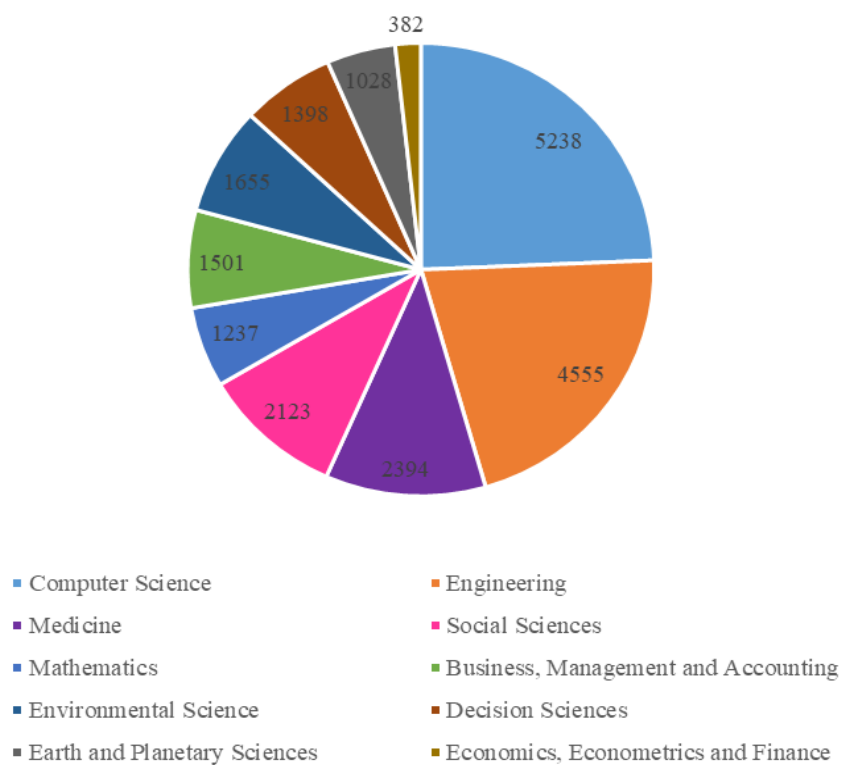


Figure 4 – Research areas of Digital Management in 2020-2021

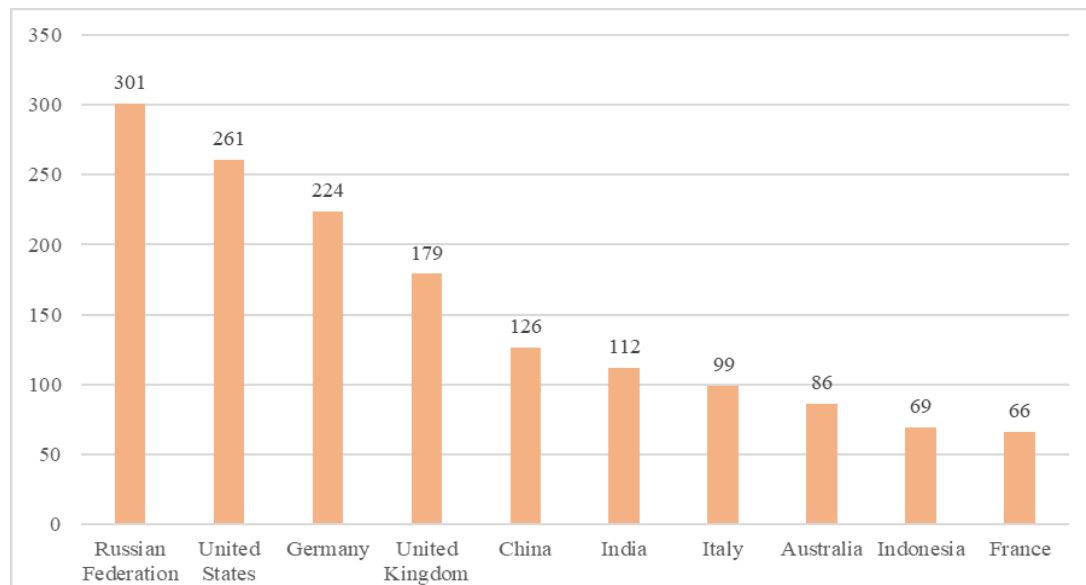


Figure 5 – Top-10 research countries in 2017-2019

And according to the indicators of 2020-2021, we can see that the United States is in first place. Also in Italy, the number of studies has increased compared

to China and India. Changes were also observed in France and Indonesia. In general, the countries of the top-10 in terms of research volume have not changed.

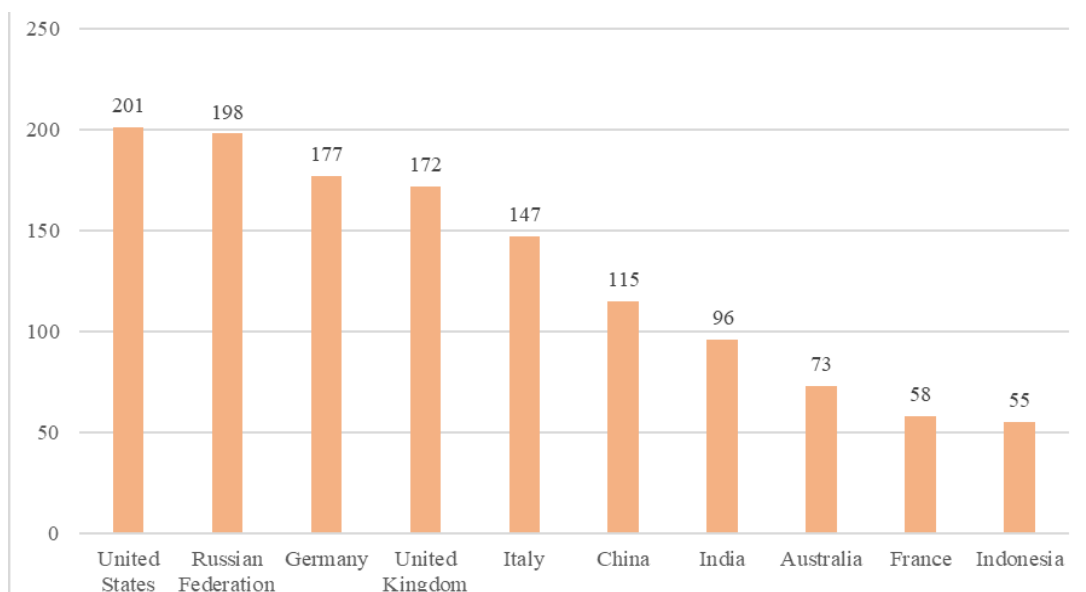


Figure 6 – Top-10 research countries in 2020-2021

Overall, we can observe how digital management research is developing in all areas every year. We were able to determine it by the above comparisons.

We analyzed research papers from 2017-2019 about digital management and selected 2146 documents. With the VosViewer program, we found 6 clusters and 140 items.

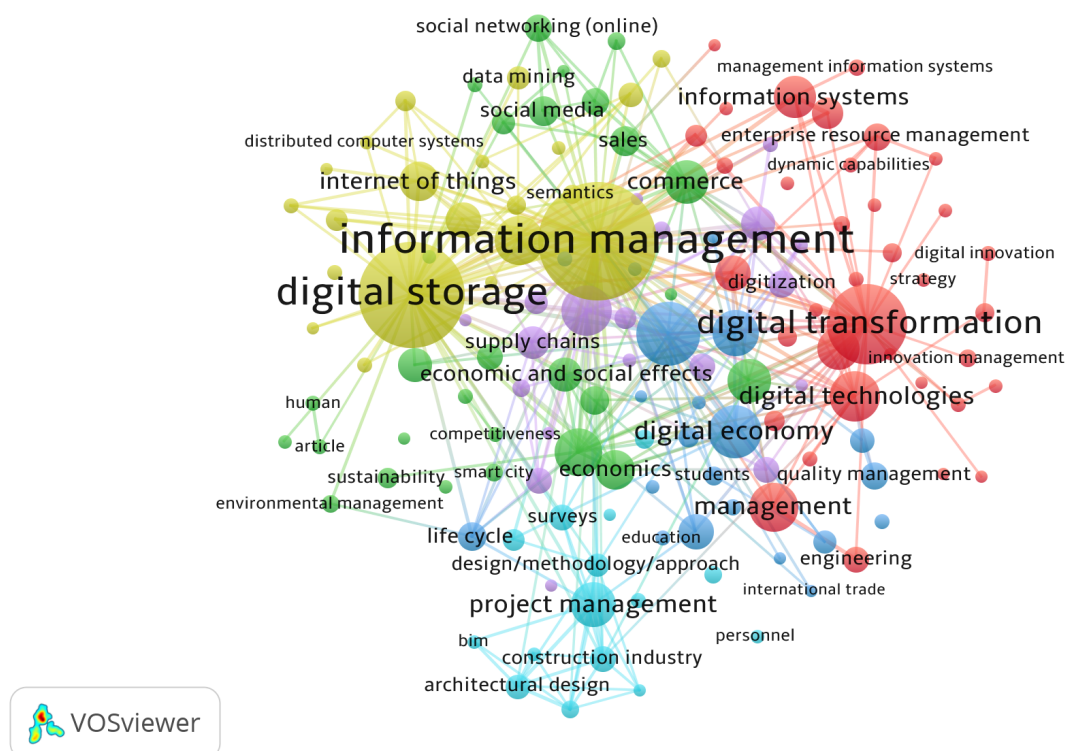


Figure 7 – Research keywords in 2017-2019 (Vos Viewer)

Cluster 1 consists of 36 items. It has «business process management», «change management», «enterprise resource management», «industrial management», «innovation management», «management information systems» keywords and shows an important role of digital management.

Cluster 2 has 28 items and includes different industries like «design», «e-commerce», «digital marketing» and development advantages such as «technological development», «sustainable development».

In cluster 3 we found 21 items. Most of them about modern education. There are keywords like «digital libraries», «e-learning», «higher education», «education», «students». With digital management distance learning can be facilitated.

Cluster 4 consists of «artificial intelligence», «big data», «blockchain», «internet of things», «digital storage», «cloud computing» and other 21 items. There are the main tools and trends of digital management.

Cluster 5 shows competition advantages of digital management in organisations and has 19 items. It includes «analog to digital conversion», «competition», «decision making», «costs», «efficiency», «optimization», etc.

In Cluster 6 15 items. Research papers in this cluster have keywords such as «building information modelling», «construction industry», «information and communication technologies», «planning», «strategic management», «project management» and shows how to realize digital management.

Table 1 – Digital Management Research Clusters 2017-2019

Cluster	Name	Number of items
Cluster 1 (red)	Digital transformation of management	36
Cluster 2 (green)	Digital management and other areas	28
Cluster 3 (deep-blue)	Digital management and education	21
Cluster 4 (yellow)	Digital management tools and trends	21
Cluster 5 (violet)	Competitive advantages of digital management	19
Cluster 6 (bright-blue)	Development of digital management	15

9250 keywords of 1682 documents in the Scopus base, we select 7 clusters out of 102 items through VOSviewer.



Figure 8 – Research keywords in 2020-2021 (Vos Viewer)

«literature review». In this cluster, we also defined a new keyword. The beginning of research on «Technology adoption» can be linked to the emergence of digital transformation in all industries.

Cluster 6 shows research papers about Industry 4.0. It includes key words like «Industrial research», «industrial revolutions», «Industry 4.0.», «economics». This demonstrates the importance of the role of digital management in Industry 4.0.development.

The last Cluster 7 has 3 items: «information systems», «information use», «management information systems». This indicates a link between digital management and information systems.

«Vos Viewer» was used to determine the difference between the 2017-2019 and 2020-2021 articles. As a result, we noticed that some changes have occurred. Since the beginning of the Covid-19 pandemic, studies of the impact of the pandemic have begun to be conducted in research in the field of digital management. In addition, using the words «technological innovation», «technology implementation», you can see that the pandemic has influenced the acceleration of the use of technology.

Cluster 5 has 11 items. There are such keywords as «supply chain management», «data management»,

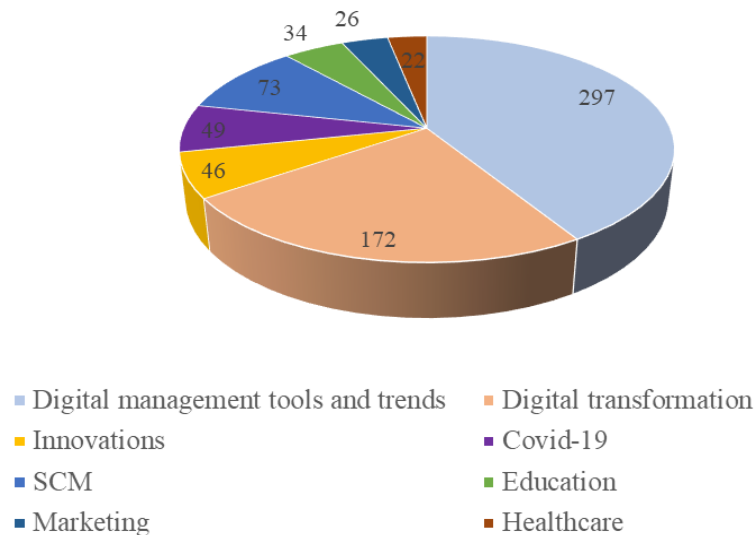
Table 2 – Digital Management Research Clusters 2020-2021

Cluster	Name	Number of items
Cluster 1 (red)	Digital management tools and trends	25
Cluster 2 (green)	Digital transformation of business	23
Cluster 3 (deep-blue)	Digital management in different areas of business	20
Cluster 4 (yellow)	Digital management and pandemic	11
Cluster 5 (violet)	Literature review	11
Cluster 6 (bright-blue)	Digital management and Industry 4.0	9
Cluster 7 (orange)	Information systems of digital management	3

Results of the content analysis

Of the 1682 studies conducted in 2020-2021, 883 studies related to digital management were selected. Among them, the vast majority are studies on the topics of tools and trends of digital management, digital trans-

formation, digital innovation. They also considered studies related to the impact of the pandemic on the development of digital management of organizations. 49 articles on this topic have been researched. In addition, research has been conducted related to digital management in areas such as education, healthcare, marketing, etc.

**Figure 9** – The most studied topics in 2020-2021

The most common of research fields are digital management tools, digital transformation, digital innovation, supply chain management, COVID-19. They are the most relevant topics in the field of digital

management. In these studies, the most pressing issues of digital management, future research directions, and development opportunities are considered. We got acquainted with some literature on these topics.

Table 3 – Digital Management research topics in 2020-2021

Research field	Authors	Notes
Digital management tools and trends	Rani and Furrer, 2021; Sinha and Pradhan, 2021; Haefner et al., 2021; Sestino et al., 2020; Lindorfer, 2020.	The articles studied the use of digital management tools in organizations by questioning employees. An analysis was also carried out of state and business management using digital management tools such as blockchain, artificial intelligence, Internet of Things etc.

Continuation of table 3

Digital transformation	Nadkarni and Prüggl, 2021; Nell et al., 2021; Appio et al., 2021; Marion and Fixson, 2021; Shahi and Sinha, 2021; M., Wrede et al., 2020.	A review of the literature on digital transformation was carried out, directions of research in the future were identified. During the digital transformation, managers were interviewed to find out what traps (barriers) will exist, to find out how the digital transformation process is being carried out. The links between innovation management and digital transformation, changes in the process of digital transformation over the years, the impact of digital transformation on the work of an organization, etc. are analyzed.
COVID-19	Caballero-Morales, 2021; Ratten and Jones, 2021; Ratten, 2021; Ahmad et al., 2021; Klein and Todesco, 2021; Casalino et al., 2020.	To determine how the internal and external factors caused by the COVID-19 pandemic are affecting digital transformation, a management focus group was created and a qualitative analysis was carried out. The role of digital transformation during and after the pandemic was examined using a SWOT analysis.
Innovations	Endres et al., 2021; Wiesböck and Hess, 2020; Manotti et al., 2020; Glinkina et al., 2020.	The research papers focused on digital management of innovation processes and tools for its implementation. Directions for further exploring digital innovation were shown. A bibliographic analysis of digital innovation research has been carried out. This study used the methods of a systems approach, as well as statistical and economic analysis.
Supply chain management	Nürk, 2021; Benzidia et al., 2021; Choudhury et al., 2021; Yousif Alsharidah and Alazzawi, 2020; Yankovskaya et al., 2020; Ageron et al., 2020.	A qualitative approach was used to explore new opportunities emerging in supply chain management through digitalization, a literature review, an online survey. A study was carried out on digital transformation and the use of digital management tools such as artificial intelligence, big data in supply chain management. In addition, analytical data related to government support for digital supply chain management were presented. Through the digitalization of supply chain management, directions for its further development were developed.

Research related to digital management is used in various directions. The most common studies among them are articles about tools and trends of digital management and digital transformation. Based on the research results, these articles can be used in future additional research.

Discussion

The purpose of the article was to identify changes in digital management research since the beginning of the pandemic. To achieve this goal, we chose 2017-2019 as the pre-pandemic period and compared the studies carried out during this period with the studies carried out in 2020-2021.

After analyzing the research in two stages, we observed that there have been some changes in the research works on digital management.

First of all, with regard to the volume of research, the number of studies on digital management is constantly increasing every year. Despite the pandemic, this figure is increasing. Even from the start of the

pandemic, new challenges have arisen for digital management research.

There have been no major changes in the industry of knowledge. In both phases, digital management research was conducted in the same areas.

There is little change in the countries that have conducted the digital management study.

To identify changes by keywords, we worked with the Vos Viewer program. Since the beginning of the pandemic, we have discovered the emergence of new keywords: «technological innovation», «COVID-19», «technology adoption». During the Content Analysis, we reviewed articles written to study the impact of the pandemic on digital management. The articles investigated the role of digital management in the fight against a pandemic, digital transformation in organizations during a pandemic, etc.

Conclusion

The aim of the research work is to review the literature related to digital management, and to identify

the links of digital management with other industries, to analyze the development of digital management research. For this purpose, research work at the Scopus database was considered. In particular, a review of studies between 2017-2019 and 2020-2021 was carried out, and the features of their studies were compared.

The most common keywords were identified and described on the map using the VosViewer. In recent years, there has been an increase in the amount of research related to digital transformation and digital technologies. In 2020, due to the widespread pandemic, the number of studies conducted to analyze the impact of the Covid-19 virus on digital management began to grow.

Although the number of digital management research is constantly increasing, the vast majority of it is research in areas related to digital management, or the digitalization of these areas. Questions about real digital management, about the impact of the pandemic on its development, currently still need to be studied.

Research should continue in the future on the impact of the Covid-19 pandemic on digital governance. The amount of research conducted on this topic is not very much.

According to the proposed bibliometric analysis, it is possible to conduct research in these and various other areas.

References

- Ageron, B., Bentahar, O., & Gunasekaran, A. (2020). Digital supply chain: Challenges and future directions. *Supply Chain Forum*, 21(3), 133-138. doi:10.1080/16258312.2020.1816361
- Al-Thoblany, M. S., & Alyousef, M. I. (2021). The role of digital management in improving the performance of tourism sectors in the kingdom of Saudi Arabia in the light of 2030 vision. *Journal of Sustainable Finance and Investment*, doi:10.1080/20430795.2021.1882236
- Ahmad, A., Alshurideh, M. T., Al Kurdi, B. H., & Salloum, S. A. (2021). Factors impacts organization digital transformation and organization decision making during Covid19 pandemic doi:10.1007/978-3-030-67151-8_6
- Appio, F. P., Frattini, F., Petruzzelli, A. M., & Neirotti, P. (2021). Digital transformation and innovation management: A synthesis of existing research and an agenda for future studies. *Journal of Product Innovation Management*, 38(1), 4-20. doi:10.1111/jpim.12562
- Benzidia, S., Makaoui, N., & Bentahar, O. (2021). The impact of big data analytics and artificial intelligence on green supply chain process integration and hospital environmental performance. *Technological Forecasting and Social Change*, 165 doi:10.1016/j.techfore.2020.120557
- Caballero-Morales, S. -. (2021). Innovation as recovery strategy for SMEs in emerging economies during the COVID-19 pandemic. *Research in International Business and Finance*, 57 doi:10.1016/j.ribaf.2021.101396
- Carracedo, P., Puertas Medina, R., & Luisa Martí Selva, M. (2020). Research lines on the impact of the COVID-19 pandemic on business. A text mining analysis. *Journal of Business Research*, doi:10.1016/j.jbusres.2020.11.043
- Casalino, N., Zuchowski, I., Labrinos, N., Nieto, Á. L. M., & Martín-Jiménez, J. A. (2020). Digital strategies and organizational performances of smes in the age of coronavirus: Balancing digital transformation with an effective business resilience. *Law and Economics Yearly Review*, 8, 347-380. Retrieved from www.scopus.com DOI: 10.2139 / ssrn.3563426
- Chadee, D., Ren, S., & Tang, G. (2021). Is digital technology the magic bullet for performing work at home? lessons learned for post COVID-19 recovery in hospitality management. *International Journal of Hospitality Management*, 92 doi:10.1016/j.ijhm.2020.102718
- Choudhury, A., Behl, A., Sheorey, P. A., & Pal, A. (2021). Digital supply chain to unlock new agility: A TISM approach. *Benchmarking*, doi:10.1108/BIJ-08-2020-0461
- Endres, H., Huesig, S., & Pesch, R. (2021). Digital innovation management for entrepreneurial ecosystems: Services and functionalities as drivers of innovation management software adoption. *Review of Managerial Science*, doi:10.1007/s11846-021-00441-4
- Glinkina, O. V., Ganina, S. A., Maslennikova, A. V., Solostina, T. A., & ViktorovnaSoloveva, M. (2020). Digital changes in the economy: Advanced opportunities for digital innovation. *International Journal of Management*, 11(3), 457-466. doi:10.34218/IJM.11.3.2020.049
- Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda □. *Technological Forecasting and Social Change*, 162 doi:10.1016/j.techfore.2020.120392
- Kamal, M. M. (2020). The triple-edged sword of COVID-19: Understanding the use of digital technologies and the impact of productive, disruptive, and destructive nature of the pandemic. *Information Systems Management*, 37(4), 310-317. doi:10.1080/10580530.2020.1820634
- Klein, V. B., & Todesco, J. L. (2021). COVID-19 crisis and SMEs responses: The role of digital transformation. *Knowledge and Process Management*, 28(2), 117-133. doi:10.1002/kpm.1660
- Lindorfer, B. (2020). "Management of technologies in the 21st digital century". Paper presented at the 26th International Association for Management of Technology Conference, IAMOT 2017, 829-850.
- Manotti, J., Sanasi, S., Cavallo, A., Ghezzi, A., & Rangone, A. (2020). Digital innovation: A bibliometric review and research agenda. Paper presented at the Proceedings of the European Conference on Innovation and Entrepreneurship, ECIE, , 2020-September 369-375. doi:10.34190/EIE.20.116
- Marion, T. J., & Fixson, S. K. (2021). The transformation of the innovation process: How digital tools are changing work, collaboration, and organizations in new product development*. *Journal of Product Innovation Management*, 38(1), 192-215. doi:10.1111/jpim.12547

- Mikhnenko, P. A. (2020). Digital management: models of concept development. *Innovation in management*, 3 (25), 30-39.
- Mora Cortez, R., & Johnston, W. J. (2020). The coronavirus crisis in B2B settings: Crisis uniqueness and managerial implications based on social exchange theory. *Industrial Marketing Management*, 88, 125-135. doi:10.1016/j.indmarman.2020.05.004
- Nadkarni, S., & Prügl, R. (2021). Digital transformation: A review, synthesis and opportunities for future research. *Management Review Quarterly*, 71(2), 233-341. doi:10.1007/s11301-020-00185-7
- Nell, P. C., Foss, N. J., Klein, P. G., & Schmitt, J. (2021). Avoiding digitalization traps: Tools for top managers. *Business Horizons*, 64(2), 163-169. doi:10.1016/j.bushor.2020.11.005
- Nürk, J. (2021). Smart information system capabilities of digital supply chain business models. *European Journal of Business Science and Technology*, 5(2), 143-184. doi:10.11118/EJOBSAT.V5I2.175
- Rani, U., & Furrer, M. (2021). Digital labour platforms and new forms of flexible work in developing countries: Algorithmic management of work and workers. *Competition and Change*, 25(2), 212-236. doi:10.1177/1024529420905187
- Ratten, V. (2021). COVID-19 and entrepreneurship: Future research directions. *Strategic Change*, 30(2), 91-98. doi:10.1002/jsc.2392
- Ratten, V., & Jones, P. (2021). Entrepreneurship and management education: Exploring trends and gaps. *International Journal of Management Education*, 19(1) doi:10.1016/j.ijme.2020.100431
- Sestino, A., Prete, M. I., Piper, L., & Guido, G. (2020). Internet of things and big data as enablers for business digitalization strategies. *Technovation*, 98 doi:10.1016/j.technovation.2020.102173
- Shahi, C., & Sinha, M. (2021). Digital transformation: Challenges faced by organizations and their potential solutions. *International Journal of Innovation Science*, 13(1), 17-33. doi:10.1108/IJIS-09-2020-0157
- Sinha, S., & Pradhan, C. (2021). Blockchain technology enabled digital identity management in smart cities doi:10.1007/978-3-030-53149-2_7
- Solozhentsev, E., & Karasev, V. (2020). The digital management of structural complex systems in economics. *International Journal of Risk Assessment and Management*, 23(1), 54-79. doi:10.1504/IJRAM.2020.106163
- Wiesböck, F., & Hess, T. (2020). Digital innovations: Embedding in organizations. *Electronic Markets*, 30(1), 75-86. doi:10.1007/s12525-019-00364-9
- Wirtz, B. W., Müller, W. M., & Weyerer, J. C. (2020). Digital pandemic response systems: A strategic management framework against covid-19. *International Journal of Public Administration*, doi:10.1080/01900692.2020.1858316
- Wang, C., Horby, P. W., Hayden, F. G., & Gao, G. F. (2020). A novel coronavirus outbreak of global health concern. *Lancet (London, England)*, 395(10223), 470-473.
- Wrede, M., Velamuri, V. K., & Dauth, T. (2020). Top managers in the digital age: Exploring the role and practices of top managers in firms' digital transformation. *Managerial and Decision Economics*, 41(8), 1549-1567. doi:10.1002/mde.3202
- Yankovskaya, V. V., Panko, I. V., Kruglyak, Z. I., Kolesnikov, A. V., & Kosarev, V. E. (2020). Digital supply chain trends in the world economy. *International Journal of Supply Chain Management*, 9(4), 828-835.
- Yousif Alsharidah, Y. M., & Alazzawi, A. (2020). Artificial intelligence and digital transformation in supply chain management A case study in saudi companies. Paper presented at the 2020 International Conference on Data Analytics for Business and Industry: Way Towards a Sustainable Economy, ICDABI 2020, doi:10.1109/ICDABI51230.2020.9325616

EDUCATION

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ADAPTABILITY OF EDUCATIONAL PROGRAMS' CONTENT TO DISTANCE LEARNING TECHNOLOGIES IN HIGHER EDUCATION INSTITUTIONS OF KAZAKHSTAN

The purpose of the article is to determine the level of adaptability of the of higher education institution educational programs' content to distance learning technologies based on the application of the principles of synergy and coherence.

A comprehensive analysis of the disciplines of educational programs of all levels of training in the specialty «Chemistry» was carried out. According to the results of the analysis, the disciplines that can be transferred to online format and distance learning technologies without discussion and the disciplines that require additional digital and resource support are identified. During the transition to online format and distance learning technologies it is necessary to keep in mind the specifics of each direction of training and the peculiarities of the organization of the learning process. From the perspective of synergetics and connectivism principles, the reorientation of the educational process from the traditional form to distance and online learning has revealed a number of problems associated with the failure to prepare the education system for the new realities.

Key words: educational programs, adaptability of educational programs, inter-discipline connection, distance educational technologies and online learning.

Introduction

In the context of globalization and the transition to a digital economy, the ways of learning in the educational system are changing. This situation also affects higher education institutions. The new paradigm of higher education is characterized by a shift from the traditional form to distance and online learning. Due to the COVID 2019 pandemic lockdown in mid-April 2020, 1.5 billion students were affected by school closures in 195 countries, from preschool to higher education institutions (UNESCO, 2020b).

In Kazakhstan, 131 institutions of higher education have switched to distance/online learning (Information and Analysis Center, 2020). In the United States, more than 80 percent of major institutions of higher education, that is, 4.6 million students, are enrolled in online courses.

Online enrollment has also increased by 17% (Allen and Sailor, 2010). This situation, meaning the massive shift to distance learning, has raised serious questions about the quality of online learning.

In recent years, online learning has been widely used throughout the world (Beck et al., 2013 ; Culp et al., 2005). To some extent, the proliferation of online learning is limited by access to the Internet, community infrastructure, and community/individual tech-

nology resources; in areas where these factors are not available, learners have difficulty participating in online education programs (Rideout & Katz, 2016).

Pandemic has identified several problems associated with the inability of Kazakhstan's education system to switch smoothly to online/distance education (Bokayev, B., et al., 2021). The strongest impact is the lack of material and technological resources. The transition to distance / online education in a pandemic requires improvement in technological and pedagogical terms. Expanding access to high-speed Internet for quality online education is especially important.

Some foreign scholars like Nissenbaum, Walker, Trinkle are concerned that distance education threatens the quality of education (Nissenbaum, & Walker, 1998; Trinkle, 1999). According to them, distance technology will make traditional education cheap and destroy the special relations of teachers and their students. The same emphasis is put on the fact that some distance courses are impersonal, superficial, misdirected, and potentially inhumane and oppressive, which disrupts the interaction that a learning community creates. In this situation, the verification of educational programs and behavior of the subjects of learning is a major component of the adaptation of the higher education system to the digital space.

The question whether the higher education system is ready to the new realities is quite relevant. The President of the Republic of Kazakhstan K. Tokayev notes the importance of the need for the forced introduction of modern distance technologies in Kazakhstan's universities and on the other levels of education. «It is necessary to revise the content of educational programs, to make them accessible and interactive» (Tokayev, 2020). Kazakhstan realities have shown both positive and negative sides of the urgent transition to the distance and online learning system. In Kazakhstan, the difference in educational and information-technological levels of universities requires the study of methodological, organizational, psychological, content, practical and regional aspects of distance learning functioning. This is caused by the fact that Internet connections across the country are not available everywhere, and this is acutely felt especially in remote areas. The reorientation of the educational process in training areas and educational programs by supplementing the database of information and content resources of distance learning requires the application of synergetic theory and connectivism principles.

Literature review

The article is based on the leading methodological approaches to verification of social programs, including educational programs of higher educational institutions.

With the impact of the pandemic on changes in educational services and the shift to distance learning, institutions of higher education have been forced to switch to online learning, integrate their non-academic staff to be a supportive part of the online platform to better implement the initiative (Pushkar Dubey, Deepak Pandey, 2020).

The transition to distance learning does not diminish the role of the traditional form of learning. Each way of learning, traditional and online learning, and the two forms of knowledge transfer should offer some strong elements for education, but by no means should be seen as one above the other. Obviously, face-to-face learning can be useful and enriched with elements of online education in any case (Karalis, & Raikou, 2020).

Researchers publish the results of a study examining the current challenges of distance education in higher education under pandemic conditions. Students' adaptability to online learning in a pandemic environment and the transition to online learning revealed that many students are not accustomed to learning effectively on their own (Owusu-Fordjour, Koomson, Hanson, 2020).

Siemens and Downs have developed clear principles of connectivism that apply to distance and online learning. Connectivism is based on individual ideas and opinions, appreciating the diversity of others' perspectives, lifelong learning, relationship building, interdisciplinary connections, current information and risk accepting.

The practical application of connectivism can best be seen in distance learning with the development of massive open online courses. Connectivism theorists suggest that cognitive tasks between people and technology are performed in networks that represent connections between «people, groups, systems, domains, ideas, or communities. As Siemens suggests, formal learning as we know it, lectures, traditional textbooks, and classroom structures no longer make up much of learning, but are replaced by informal experiences that can take place in online learning environments (Siemens, 2005b., 2018).

Russian scientists Yu.V. Gorbunkova, E.S. Polat, F.L. Ratner and others have studied organizational and pedagogical aspects of distance learning, problems of distance learning, principles of distance education, problems of implementing distance learning technology in universities. They raise the question of developing electronic educational resources based on foreign experience. They argue that this form of learning leads to superficial, merely practice-oriented learning, does not allow high-quality and meaningful learning and research activities (Gorbunkova, 2001; Polat, 2005; Ratner, 2008).

Kazakhstani scientists in their studies have touched upon the issues of social policy in the implementation of the program «Information Society-2030», distance education, innovative technologies, the formation of the information educational space. In particular, E.K. Balafanov, B. Buribayev, A.B. Dauletkulov study the problems of new information technologies (Balafanov, Buribayev & Dauletkulov, 2009). S.K. Omarova's work is devoted to the modern trends of education in the era of informational technologies (Omarova, 2018). The peculiarities of technology and methods of distance education in Kazakhstan have been analyzed in the work of A.K. Kusainov and A.A. Sharipbai. In particular, they characterized the subsystems of distance learning, justified the importance of distance technologies in modern society, defined the features of distance learning in Kazakhstan (Kusainov and Sharipbai, 2019).

Compiling indicators of the difference between traditional and innovative forms of learning, considering the particularities of the areas of training will improve the effectiveness of training adapted to the new conditions of educational programs.

The transformation of the traditional form of learning is part of the process of formation of the digital economy in Kazakhstan and the policy on the organization of training using distance learning technologies. Kazakhstan is focused on the introduction of modern distance technologies and revision of the content of educational programs to make them accessible and interactive.

In the state program of development of education and science of RK for 2020-2025 in order to increase the global competitiveness of Kazakhstan education and science, upbringing and educating personality on the basis of universal values the problem of modernization of the content of education is emphasized (State Program of the Republic of Kazakhstan).

Consequently, the preparation and functioning of new educational programs are focused on the formation of flexible and professional skills (soft skills, hard skills) required in the rapidly changing world of VUCA, involving lifelong learning.

Nevertheless, the problems and mechanisms of adapting educational programs and textbooks for specialties and subjects of education to the transition to distance and online education, one might say, have not yet fully become the object of study.

Materials and methods

To solve the tasks set in the article the following research methods were used:

- Review of scientific literature concerning the online format and distance learning technologies, adaptation of educational programs accordingly;
- The comparative method was used to analyze the interdisciplinary structure of educational programs in the specialty «Chemistry» at all levels of

training for the transition to online format and distance learning technologies;

The method of collecting primary information is a content analysis of educational programs in the studied specialty. The sources of primary information are educational and methodical documents, curricula, teaching materials, SPOC and MEP base, digital resources.

Results and Discussion

Comprehensive and comparative analysis of educational programs, educational-methodical complex of disciplines and MEP in modern educational conditions, where the time requires reorientation of the educational process to the distance learning format, will offer a differentiated approach in the implementation of distance learning technologies in combination with traditional forms of learning.

In the context of modern challenges it is necessary to study not only the objective indicators of the transition to distance and online learning formats, but also to identify hidden factors in the application of educational programs for specialties, the interaction of subjects of the educational process with the new realities.

DL (distance learning) programs are based on the modular principle. Each separate discipline (course), which is being mastered by a student, is relevant to a particular subject area. This leads to the creation of a curriculum consisting of several independent courses that meet the individual or group needs.

While writing the article we analyzed the curricula (Table 1) of educational programs in the field of «Chemistry» at three levels of training (bachelor, master, PhD).

Table 1 – Curriculum of educational programs
6B053011 Chemistry

Code	Names of disciplines/other educational activities	practice. (hour)	lab (hour)
M-1 Module of social and cultural development			
SIK 1101	Modern history of Kazakhstan	30	0
FiL 2102	Philosophy	30	0
MSPZ 2103	Module of socio-political knowledge (Sociology, Political science, Culture, Psychology)	20	0
M-2 Instrumental module			
IKT2104	Information and Communication Technologies (in English)	0	30*
IYa 1105	Foreign Language	90	0
K(R)Ya 2106	Kazakh (Russian) Language	90	0
M-3 Module Physical Training			

Continuation of table 1

FK 1107	Physical Training	75	0
M-4 Physics and Mathematics Module			
Mat 1201	Mathematics1	30	0
Mat 1202	Mathematics2	30	0
Fiz 1203	Physics1	0	60
Fiz 1204	Physics2	0	60
M-5 General chemistry			
OH 1205	General chemistry	15	30
POH 1206	General Chemistry Practical Work	15	60
PP 1207	Professional (educational) practice	12	
M-6 Analytical chemistry			
AH 2208	Analytical chemistry 1	15	60
AH 2209	Analytical chemistry 2	15	60
PP 2210	Professional (industrial) practice	30	0
M-7 Chemical thermodynamics and kinetics of equilibrium and nonequilibrium processes			
FH 2211	Physical chemistry 1	15	60
FH 2212	Physical chemistry 2	15	60
HF 3213	Chemical physics	15	60
KH 3214	Colloid chemistry	0	60
PP 3215	Professional (industrial) practice	36	0
M-8 Organic chemistry			
OH 3216	Organic chemistry 1	15	60
OH 3217	Organic chemistry 2	15	60
M-9 Measurement of parameters of the physico-chemical process and its modelling			
HTT 2218	Chemistry of solid body	30	0
MS 3219	Metrology and standardization	30	0
PMMHP 3220	Using Matlab for chemical process modeling	15	30*
M-9 The role of experiment and mathematical modelling in chemistry			
OM 2218	Fundamentals of materials science	30	0
MMOFE 3219	Methodology and metrological support of physico-chemical experiments	30	0
MMHP 3220	Mathematical modeling of chemical processes	15	30*
M-10 Chemistry of high molecular and biochemical systems			
HVS 3221	Chemistry of macromolecular compounds	0	60
Bio 4222	Biochemistry	0	60
M-10 Kinetics and mechanism of the reactions involving biomolecules			
HP 3221	Polymer Chemistry	0	60
BH 4222	Bioorganic chemistry	0	60
M-11 Structure and properties of substances			
NH 1301	Inorganic chemistry	0	60
SV 3302	Structure of matter	15	30
M-12 Study and obtaining of substances and materials			
FMI 3303	Physical methods of research	0	60
OHT 4304	Basis of Chemical Technology	15	60
PP 4305	Professional (industrial) practice	72	0
PP 4306	Professional (pre-diploma) practice	36	0
M-13 Chemical Expertise (Expert Chemist)			
AKOOS 4307	Analytical control of environmental objects	0	60
HEPP 4308	Chemical expertise of food	0	60
HESM 4309	Chemistry and expertise of silicate materials	0	60
ETBH 4310	Expertise of household chemical goods	0	60
AMS 4311	Analysis of metals and alloys	0	60
M-13 Theoretical and Applied Chemistry (Research Chemist)			
ORRE . 4307	Fundamentals of radiochemistry and radiation ecology	0	60

Continuation of table 1

HKS 4308	Chemistry of coordination compounds	30	0
PE 4309	Applied Electrochemistry	0	60
KSP 4310	Kinetics of complex processes	30	0
TR 4311	The theory of solutions	0	60
M-13 Chemistry of organic compounds (Research Chemist)			
HGS 4307	The chemistry of heterocyclic compounds	0	60
FMAOV M 4308	Physico-chemical methods of analysis of organic substances and materials	0	60
SOM 4309	Stereochemistry of organic molecules	30	0
SRSV 4310	Structure and reactivity of compounds	30	0
TOSFP 4311	Theoretical basis for synthesis of functional polymers	30	0
M-13 Green Chemistry (Research Chemist)			
HOS 4307	Chemistry of environmental	0	60
VZH 4308	Introduction to green chemistry	30	0
NN 4309	Nanochemistry and Nanotoxicology	30	0
ZAH 4310	Green analytical chemistry	30	0
BM 4311	Biodegradable materials	0	60
M-13 Nanochemistry and Nanomaterials (Research Chemist)			
MNM 4307	Mechanochemistry of inorganic materials	15	30
VN 4308	Introduction to nanochemistry	0	60
SMAN 4309	Modern methods of analysis of nanomaterials	0	60
BN 4310	Bioengineering in Nanotechnology	30	0
KHN 4311	Colloid chemistry of nanoparticles	0	60
M-13 Obtaining and design of materials (Research Chemist)			
FHPAV 4307	Physico chemistry of surfactants	0	60
HTRE 4308	Chemistry and technology of rare elements	15	30**
KHMT 4309	Quantum-chemical methods in thermochemistry	15	30*
NFPM 4310	New functional polymeric materials	0	60
HPS 4311	Chemistry of natural compounds	0	60
M-17(İBO)			
M-12 Study and obtaining of substances and materials			

*For these disciplines, certain conditions are necessary to transfer them to online or distance learning;

** For this discipline laboratory classes can be transferred to online or distance learning based on the Internet and digital resources.

According to the results of the analysis, it can be noted that the curriculum is based on the modular approach and corresponds in content to the direction «Chemistry» research and teaching on the master's

degree. The number of modules depending on the level of training varies from 3 to 17 (Table 2), and their number in Bachelor's degree is much more than in Master's and PhD degrees.

Table 2 – Curriculum of the educational program of the Bachelor's degree 6B053011 «Chemistry»

№	Educational programs	Module (number)	Practice (number)	Practice (hour)	Lab (number)	Lab (hour)
1.	6B053011 Chemistry	17	42	1211	34	2400
2*.	7M01503 Chemistry	5	31	921	0	0
2.	7M05301 Chemistry	9	56	1722	0	0
3.	8D05301 Chemistry	3	26	780	0	0

* Master's degree in pedagogical direction. KazNU is not preparing specialists in bachelor's degree in pedagogical directions.

The comparative analysis shows that in the educational programs of Bachelor's degree in Chemistry 42 disciplines out of the total number (76) have 1211 hours of practical studies, 34 disciplines have only 2400 hours of laboratory studies. This specialty involves more laboratory research, that is conducting chemical experiments with the use of various equipment and chemical reagents. Consequently, the number of laboratory classes and, accordingly, the number of hours allocated for them in the bachelor's degree is higher. For Master's and PhD programs there are no laboratory classes, and the number and hours of practical classes are 56 (1,722) and 26 (780), respectively. There is a comparatively higher number of practical classes in the master's program. And there are no laboratory classes for both master's and doctoral programs, which implies their automatic transfer to online format and distance learning. In general, practical classes involve solving practical and typical problems, we think it is possible to transfer these classes completely to online format and distance learning.

We have studied the possibility of transferring the disciplines of the curriculum to the online format, and it was discovered that 34 disciplines with laboratory classes have their own specifics, which require their detailed study. For the discipline «Chemistry and technology of rare elements» the limited number of chemical reagents in the laboratory classes allows to transfer this discipline to the online format or distance learning based on the Internet and digital resources.

At the same time, it was revealed that there are disciplines such as «Application of Matlab for modeling chemical processes», «Mathematical modeling of chemical processes», «Quantum chemical methods in thermochemistry» in the curriculum. These disciplines require the use of paid specialized licensed software, which is not available to students because of its high cost. Usually such software is purchased for one or two computer classes for the entire department. Accordingly, distance learning in these disciplines is possible only with an extended collective license available to students. This issue needs to be addressed at the university management level.

In this regard, it should be noted that to ensure the quality of education it is necessary to create a good base of interactive and digital resources. Moreover, these resources should be available to both teaching staff and students. In order to investigate the digital resources for the educational program «Chemistry», the analysis of digital resources available at the faculty of chemistry and chemical technology was carried out.

As an additional resource, online courses in the basic disciplines were launched: Analytical Chemis-

try (SPOC), Selective Problems of Inorganic Chemistry (MOOC), Physical Chemistry (SPOC), Theory of Chemical Applications in Oil Production. Organochlorine compounds (MOOC), Organic chemistry of aliphatic compounds (MOOC), Fundamental of nanotechnology (SPOC).

At the moment a total of 74 online courses have been developed in KazNU, and the growth rate of online courses reached 30%. In general, the work is aimed at creating high-quality online courses, rather than increasing their number. In this regard, there is a question of training teachers in the process of developing and launching MOOCs. To solve this problem, systematic upgrading courses «Massive Open Online Courses: Development, Promotion and Application» are held for the university teaching staff.

In order to accept in the development and implementation of online courses of faculties for 2021 the university held a competition of scripts of online courses and their public defense. As a result of the competition, pedagogical scenarios for 19 MOOCs and 21 SPOCs were selected for publication on the platform:

- 1) MOOCs of Al-Farabi Kazakh National University;
- 2) Moodle distance learning system of Al-Farabi Kazakh National University;
- 3) National Platform for Open Education of Kazakhstan (NPOK);
- 4) Coursera – an open online course for the development of lifelong learning for children and adults.

The works of the Faculty of Chemistry and Chemical Technology in Kazakh, Russian and English languages: Theory of chemical reagents application in oil production. Organochlorine compounds; Organic chemistry of aliphatic compounds and Organic chemistry of cyclic compounds; Fundamental of nanotechnology – also passed through the competition.

On January 2, 2021 the first public open online course of the Al-Farabi Kazakh National University – Methods of molecular biology – was published on the international educational platform Coursera <https://www.coursera.org/learn/methods-of-molecular-biology>.

The analysis conducted by the Institute of New Educational Technologies shows that a large proportion of enrolled students, as well as those who successfully completed a program make for the course «Agylyshyn tili» – 3 487, «Information and Communication Technologies» – 5 926, this is explained by the introduction of these online courses in the educational process, and the course «Methods of molecular biology» – 3 932, which is explained by the publication of the course on the international

educational platform Coursera – the world leader in online education.

In the university MOOCs of the cycle «Ruhani zhangyru»: «Psychology», «Sociology», «Pedagogy of Higher Education», «Cultural Studies», «Political Science», «Philosophy» in Kazakh language were transferred from the MOOC platform of Al-Farabi Kazakh National University to Moodle distance learning system and launched with integration into the educational process. These online courses in Chemistry are studied as supplementary material to the discipline.

KazNU continues cooperation with the international educational platform Coursera on the project Coursera for Campus.

Before October 1, 2020, access to all Coursera MOOCs was unlimited and free. Students and teachers could study any MOOC of their choice and receive a certificate of successful completion. Later, Coursera automatically switched all entities participating in the no-cost promotion, which began in March 2020, to the basic package. In this case, a student or university employee can study free online courses from the catalog of the Coursera for Campus project (about 3800 titles) and receive a certificate of successful completion of only one MOOC during the calendar year. And as of June 4, 2021 about 3,200 KazNU students were enrolled in more than 10,000 Coursera courses. The most frequent choices are MOOCs in Computer Programming, English, and Management.

In this connection, Coursera suggested that the university consider switching to a paid package where students could receive certificates for an unlimited number of MOOCs studied and instructors could publish their MOOCs on Coursera. Not openly, but in SPOC format, giving access to the course only to their students.

Al-Farabi Kazakh National University also implements online courses on the National Platform for Open Education of Kazakhstan (SPOC).

In addition, there are online courses integrated into the educational process on the Coursera and OpenKazNU platforms: Distance Learning Technologies (MOOCs), Learn Distantly (MOOCs 1, 2 and 3), Theory and Practice of Creating Online Courses, Distance Learning Technologies (MOOC), Distance Learning (MOOC), Distance Learning (MOOC), Physical Chemistry, Metrology and standardization (MOOC), Probability Theory, Statistics and Exploratory Data Analysis (MOOC), Standardization and Technology (MOOC), Statistics for application (MIT open course wave), Selected problems of inorganic chemistry (MOOC), Physical chemistry (SPOC). These MOOCs create an additional base of interac-

tive resources that are necessary to provide a quality learning process in an online format.

During the 2020-2021 academic year, 288 disciplines were studied with the integration of online courses in the educational process. For example, in the Department of Chemistry and Chemical Technology: 1) Inorganic Chemistry. Chemistry; 2) Nanochemistry. Nanomaterials. 1. Nanotechnology: a Maker's course; 3) Colloid-chemical bases of environmental protection. 1. Global Environmental Management 2. Air Pollution – a Global Threat to our Health; 3) Physical Chemistry; 4) Physical Chemistry 2.1. Introduction to Physical Chemistry; 2. Introduction to battery-management systems; 5. Structure of matter. 1. Introduction to solid state chemistry 2. Principles of Inorganic Chemistry 3. Symmetry, Structure, and Tensor Properties of Materials 4. Principles of Chemical Science.

Thus, Al-Farabi Kazakh National University students are given the opportunity to choose a Massive Open Online Course (MOOC) as an alternative to the discipline they are studying as part of their chosen educational program.

Also during both spring and fall semesters of the academic year 2020-2021, 126 exams were held in the alternative form, where students were re-credited with certificates from online courses upon successful completion of the course. In Chemistry, the number of retakes was 20 and the number of alternative exams was 2.

Digital tools were introduced in the educational process for several disciplines Kahoot: General and inorganic chemistry; Physical chemistry, catalysis and petrochemistry; Kahoot and Quizizz: General and inorganic chemistry; Miro: Chemistry and technology of organic substances, natural compounds and polymers; Kahoot and Miro: Analytical chemistry.

Also a video lecture by visiting foreign professor Yitzhak Mastai was recorded, which is available to students majoring in Chemistry.

Despite the focus of this curriculum on the training of a research chemist and expert chemist, the specialty «Chemistry» creates the basis on which the necessary digital resources for the transfer of a number of curriculum disciplines to online format or distance learning technologies are provided.

Conclusion

Based on the analysis we can make appropriate conclusions regarding the partial transfer of disciplines to the online format or distance learning technologies. The need for such a study is explained by the fact that in the conditions of the lockdown associated with the COVID-19 pandemic we were

convinced that despite the unexpected situations, the educational process cannot be interrupted, and universities must be ready for such a force majeure at any moment. Moreover, global trends and modern challenges set the task of digitalization of the educational process.

In the context of the transition to distance learning technologies, higher education institutions should do the following:

- conduct an analysis of the material, technical, technological capacity and qualitative composition of teachers, which will help assess the real potential and preparedness of faculties for the transition to distance learning technologies;

- to identify problems of objective and subjective nature in the implementation of educational programs in humanities, science and technical specialties in the transition to distance learning technologies

by conducting quantitative and qualitative studies of effective management of education, considering the motivational structure of the subjects of learning;

- to identify key indicators of difference between traditional and innovative forms of learning and make a proper list on it;

- to determine the specifics of traditional and distance learning technologies, including online learning format, by studying the results of scientific research and sociological surveys in the form of questionnaires, interviews and focus groups among management, lecturers and students;

- to check the content of programs and teaching materials of universities of different profiles and statuses in order to identify the compliance of educational programs in the humanities, scientific and technical specialties and their level of adaptability to the transition to distance learning technologies.

References

- Allen, I. E. & Seaman, J. (2010). Learning on demand: Online education in the United States, 2009. Retrieved from <http://sloan-consortium.org/publications/survey/pdf/learningondemand.pdf>
- Balafanov, E.K., Buribaev B., & Dauletkulov A.B. (2009). New information technologies: 30 lessons in informatics: a textbook. – Almaty: Institute of New Technologies, 400.
- Beck, D., Maranto, R., & Lo, W.-J. (2013). Determinants of student and parent satisfaction at a cyber charter school. *The Journal of Educational Research*, 107(3), 209–216. <https://doi.org/10.1080/00220671.2013.807494>
- Bokayev, B., Torebekova, Z., Davletbayeva, Z., & Zhakypova, F. (2021). Distance learning in kazakhstan: Estimating parents' satisfaction of educational quality during the coronavirus. *Technology, Pedagogy and Education*, 30:1, 27-39. <https://doi.org/10.1080/1475939X.2020.1865192>
- Culp, K. M., Honey, M., & Mandinach, E. (2005). A retrospective on twenty years of education technology policy. *Journal of Educational Computing Research*, 32(3), 279–307. <https://doi.org/10.2190/7W71-QVT2-PAP2-UDX7>
- Distance learning: the state and prospects of development of distance learning in the Republic of Kazakhstan. https://stud.wiki/pedagogics/2c0a65625b3bd69b5c53a88421216c36_3.html
- Gorbunkova, V., et al. (2001). Distance learning. – Moscow: Vldos, 192 p.
- <https://kokshetau.asia/socialnews-mobile/55195-vystupleniya-tokaeva-na-zaklyuchitelnom-zasedanii-gosudarstvennoj-komissii-po-chrezvychajnomu-polozheniyu>
- Information and Analytical Center. (2020). National collection 'Statistics education system of the Republic Kazakhstan'. Nur-Sultan.
- Karalis, T., & Raikou, N. (2020). Teaching at the Times of COVID-19: Inferences and Implications for Higher Education Pedagogy. *International Journal of Academic Research in Business and Social Sciences*, 10(5), 479–493
- Kusainov, A.K., Sharipbai A.A. (2019). Technology and methodology of distance learning in the republic of kazakhstan, *Professional Education in Russia and abroad*. №2 (34), 23-28.
- Nissenbaum, H., & Walker, D. (1998); A grounded approach to social and ethical concerns about technology and education. *Journal of Educational Computing Research*, 19(4), 411–432; Trinkle, D. A. (1999). Distance education: a means to an end, no more, no less. *The Chronicle of Higher Education*, 45(48)
- Omarova, S. K. (2018). Modern trends in education in the era of digitalization, *Pedagogy. Problems of theory and practice*, № 1(9), 78-83.
- Owusu-Fordjour, C., Koomson, C. K., Hanson, D. (2020). The impact of covid-19 on learning – the perspective of the ghanaian student. *European Journal of Education Studies*. Volume 7 , Issue 3, P. 88-101. doi: 10.5281/zenodo.3753586
- Polat, E.S. (2005). Distance Learning: Organizational and Pedagogical Aspects. *INFO*, 243.
- Pushkar Dubey, Deepak Pandey (2020). Distance Learning in Higher Education during Pandemic: Challenges and Opportunities. // *The International Journal of Indian Psychology*. May, Volume 8, Issue 2, April- June, DIP: 18.01.204/20200802, DOI: 10.25215/0802.204. P.43-46
- Ratner, F. L. (2008). Development of electronic educational resources: foreign experience. *Kazan*, 103.
- Rideout, V. J., & Katz, V. S. (2016). Opportunity for all? Technology and learning in lower-income families. A report of the families and media project. The Joan Ganz Cooney Center at Sesame Workshop.

Siemens, G., 2005b. (2018). C onnectivism: Learning as Network-Creation. Retrieved September 12, 2018, from:<http://masters.donntu.org/2010/fknt/lozovoi/library/article4.htm>.

State Program of Education and Science Development of the Republic of Kazakhstan for 2020 – 2025 <http://adilet.zan.kz/rus/docs/P1900000988>)

UNESCO. 2020b, April 29 1.3 billion learners are still affected by school or university closures, as educational institutions start reopening around the world, says UNESCO. UNESCO. <https://en.unesco.org/news/13-billion-learners-are-still-affected-school-university-closureseducational-institutions>.

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RELEVANCE OF MENTAL HEALTH PROBLEM AMONG UNDERGRADUATE STUDENTS OF WEST BENGAL DURING COVID-19

Mental health subjects hindrance to scholastic achievement. Mental health crunch has appeared during the COVID-19 pandemic. Students' stimulation, devotion, and social exchanges all these decisive variables were affected due to mental illness and it creates an impact on the success of higher education. Understudies are progressively perceived as a weak populace, as suffering from higher levels of tension, melancholy, substance misuse, and confused eating contrasted with everyone. This scenario has brought a drastic change in educational system —such as sheltering in place during the COVID-19 pandemic—the burden on the mental health of this vulnerable population is amplified. The key concentration of the study is to conjecture the impact of a pandemic on the mental health of undergraduate students in West Bengal. The mental health problems have been emerged among the understudies and it will gauge the relevant factors that is related to the problem. The approach adopted by the investigator is Descriptive Survey in nature. To assess the mental health of fresh minds a Perceived Stress Scale has been used by the investigator on 5-point Likert scale to measure the mental health of 384 college going students of West Bengal through Google form. The Brief-COPE Scale was used to measure the operative and non-operative ways to cope with a stressful life event. The data were analyzed with the help of SPSS software. The results of the study revealed that the mental health of college going students have been severely affected due to stress, which ranges from low to moderate and moderate to high levels, respectively. Students preferred more emotion focused, actively focused, emotional support, positive reframing than self-blame, substance use, denial, venting. The research found that different social factors have a significant impact on the students' mental health during the COVID-19 pandemic situation. They have become mentally depressed, as the educational institutions have been closed for more than a year. With the closer educational institutions, most students are deprived of social contacts, which leads to depression, sleep, financial educational problems, etc. As appearing of various kinds of family and social crises in front of the students, like the quarrel between parents, lack of income in the family, and loss of job by family member leads them to be more mentally ill. To recover from the situation, they adopted various effective and ineffective coping strategies to make proper adjustment in life.

Key words: Mental Health, Stress, Stressor, Students, Coping Styles.

Introduction

The COVID-19 pandemic cater to psychological illness of different influenced populace. WHO states «Mental health includes subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence, and self-actualization of one's intellectual and emotional potential, among others». The occurrence of epidemics creates new stressors, including apprehension and stress for oneself or friends and family, requirements on actual development and social exercises because of isolate, and abrupt and revolutionary way of life changes. This new audit of epidemic flare-ups and pandemics recorded stressors, for example, disease fears, disappointment, fatigue, deficient supplies, lacking data, monetary misfortune, and disgrace i.e., worldwide wellbeing crisis. India's Government under Prime Minister Narendra Modi ordered a nationwide lockdown

for 21 days on day March 24, 2020, for restricting the movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India (Bureau, 2020). After the end of initial lockdown period approached, frame drew closer, state governments and other warning boards of trustees suggested expanding the lockdown Narendra Modi broadened the cross country lockdown until 3 May, with a contingent unwinding after 20 April for the areas where the spread had been contained or was negligible (Bureau P. I., 2020). India's Government again broadened the cross-country further lockdown by about fourteen days from 1st May until May 17 (Mishra, 6 December, 2020). With this, the locale were segregated into three zones reliant on the spread of the infection green, red and orange with reductions applied likewise. Again, the lockdown was additionally reached out till from 17th May until 31st May by the National Disaster Management authority. On

30 May, announcement was made that the present lockdown would be extended again until 30 June in regulation zones, with administrations continuing in a staged way beginning from 8 June (Mishra, 6 December, 2020). The overall quick increment of contaminated cases has made a feeling of vulnerability and nervousness about the thing will occur. It has additionally caused an enormous degree of stress among the understudied. This pressure might prompt horrible impacts on the learning and mental well-being of understudied. Understudied who figured out how to return home is stressed over being not able to get back to their separate. Besides actual anguish, it is not phenomenal for affirmed or associated cases with COVID-19 to experience the ill effects of huge mental pressing factors and other wellbeing-related issues. Forlornness, drives of dread, melancholy, conditions of agony, mental ailment, dangers, and a few different issues impact the presence of the individual and local area overall (Rehman, 23 June, 2020). Understudies felt more nervous, frustrated, depressed, irritated, and withdrawn during the epidemic or while in quarantine, especially in Isolation for those with cognitive impairment or dementia (Wilson, 2020). The closures of universities may contribute to poor mental health. Undergraduates are likewise emotionally unsuitable and lockdowns located social distance surrounded through them and unique human beings while they inhabit at domestic. Committing suicide is a dangerous social problem derived from mental health problems where electronic and print media and online platforms like social media, blogs, and online forums play a significant role in increasing the problem. With the closer of educational institutions, the majority of university students were deprived of pocket earnings. As appearing of various kinds of family and social crises in front of the students, like the quarrel between parents, lack of income in the family, and loss of job by family members leads them to be more mentally ill. Their intellectual communicate hold diminished all in conjunction with the pandemic role. Learning does not simplest rely upon schooling; it additionally necessitates interplay, which is constrained through the coronavirus frequent. Students exist going through depression as the family disaster exist seen and impoverished of leisure due to the distance set up with accomplice resulting latest frustration, alienation, despair that affect their psychic fitness. Late examination shows that individuals set in isolation and isolate experience significant melancholy as dread, dissatisfaction, vulnerability, and manifestations of posttraumatic stress. (Brooks et al., 2020).

Review of Literature

Various studies has been conducted in past i.e., from the onset of COVID 19 and as well as in present situation.

Purabi, Sakia. Sarma, Jinamoni. (2020). «A Study on Impact of COVID 19 on Under Graduate Students in Assam, India». Most of the students have become passive learner in online education; reasons are like technical problem, economical barrier, lack of motivation and communication with the teacher and institutions. Mental disturbance was another mostly affecting factor in student's education due to adjustment, communication, completion of course content, mental disturbances, changing guideline problem and technical problems. Khan, Qutbudin. & Swaminathan, J. (2021). «Impact of COVID-19 Lockdown on Mental Health and Social Life of University Students of Delhi». The study revealed that majority of the respondents (67.5%) reported that they believe continuous lockdown may affect the mental health of the people. Bhargava, Rashi. et al. (2021). «Anxieties and Fears: A Sociological Study of Mental Health of Students in COVID-19 Pandemic». Their issues can be broadly put into three categories – firstly, uncertainty about career/higher studies (62.3%); secondly, continuously changing university guidelines especially with regard to academic calendar and online exams which might lead to lower grades (45.6%) and thirdly, financial problems that might come up in days to come (27.8%).

This study estimated the mental health impact of COVID-19 on university students in West Bengal. It was conducted to investigate the psychological status of undergraduate students during the pandemic for the following reasons: to evaluate the prevalence of stress, anxiety, and depression of university students during the pandemic; and to provide a basis for universities and governmental policies to support university students affected by COVID-19.

Statement of Problem

Mental health issues obstruction to scholastic achievement. Presently, COVID-19 is one of the vital reason for creating emergencies on mental health. It has exaggerated the students' enthusiasm, attentiveness, and social interactions. These fundamental factors create barriers for students to succeed in higher education. Therefore, the statement of problem is «A Study on Mental Health of Undergraduate Students of West Bengal during the Era of COVID».

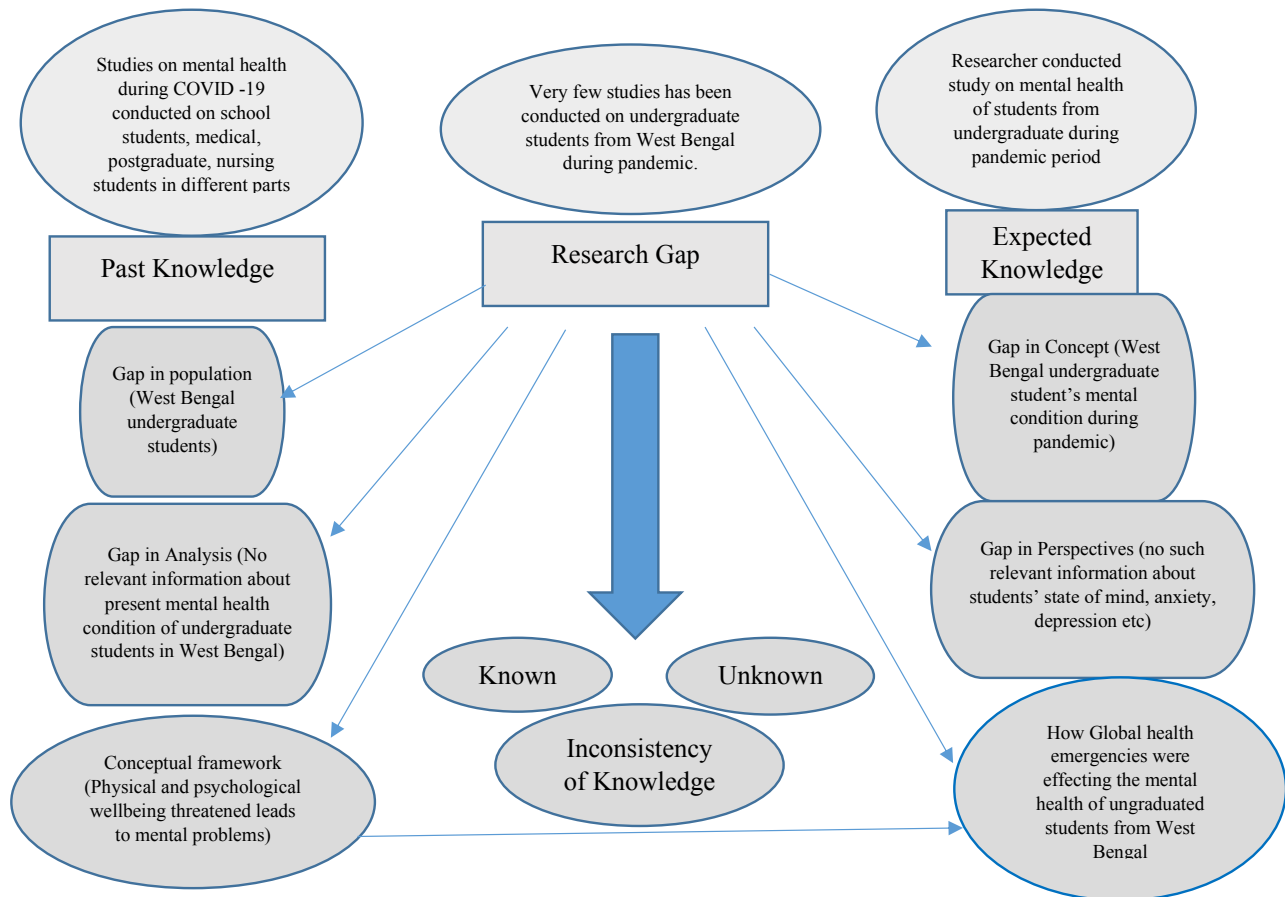


Figure 1 – Showing the Research gap of previous study and the formation of new conceptual framework
Source: Kumar, D.M. (2020). Journal through research Gap. White Paper.

Hypothesis of Study

H₀1: There is no significant relationship between the effect of lockdown and the perceived stress on the undergraduate students of West Bengal.

H₀2: There is no significant relationship between the specific pandemic stressor and their impact on mental health of undergraduate students of West Bengal.

H₀3: There is no significant relationship between perceived stress and coping strategies adopted by undergraduate students of West Bengal.

Methodology of Study

According to Kerlinger (1973), research design consists of a structure of research and research techniques. The design of the study is Survey in nature. It is a stable and systematic plan prepared for directing a study. The objectives of the study and techniques to be adopted to testify the above stated hypothesis.

Area of Study

The study was conducted in the government-aided colleges of West Bengal where degree courses of arts, science and commerce were conducted under the affiliation of different universities.

Target Population

The total percentage of students who were studying in the government aided colleges of West Bengal under the affiliation of different universities. The population of study includes all the students who were studying in the government-aided colleges of West Bengal and pursuing their certification on graduate degree.

Method of Data Collection

The study made use of both primary and secondary data.

Primary data were collected by applying psychological tools and responses were collected from the

respondents through Google Form. It refers to data, which are collected for a specific purpose from the field and are original.

Secondary data were collected through various web sources and expert opinions, various textbooks, websites, journals, dissertations, etc.

Study Variable

Independent Variable

Demographic characteristics like age and sex of students.

Dependent Variable

Perceived stress level and coping approaches to stress.

Sample of the Study

The states where larger proportions of out-migrants

were enumerated are west-Bengal (21.4 per cent)

The total no. of enrolment of students in colleges is about 1,693,448 and the collected number of sample from the study area should be 384. To determine the sample size investigator used the Morgan's Table with 5% error of margin at 95% confidence level (Morgan, 1970) to justify the authenticity of selected sample size.

Sampling Technique

Investigator used snowball non-probability sampling techniques for data collection. Data, collected from primary sources, have been compiled from Quantitative analysis. This technique is based on three criteria, which are delineated below:

- Firstly, the respondents must be from undergraduate course.
- Secondly, they must belong to the state of West Bengal.
- Thirdly, they must be between the age group of 19- 24 years.

Tool used for the study

To conduct the study two psychological tools were used by the investigators. The Perceived Stress Scale was used by the investigators to measure the mental health wellbeing of students from undergraduate course from West Bengal. The second tool is a Brief Coping strategic which were applied to students who were suffering from high stress to measure the effective and ineffective ways to cope with stressful situations.

Techniques Employed For the Development of Research Tool

Sheldon Cohen developed the Perceived Stress Scale and his colleagues discovered the Perceived Stress Scale in the year 1983. The primitive PSS consisted of 14-items that measured the seeming stress degree subjective interpretation of the reactions of the individuals during a 1-month period. Nowadays, the PSS has been scaled down to 10-item with stress-related questions, focusing on the respondent's feelings and thoughts during the preceding month. The Perceived Stress Scale score is obtained by summing the points awarded to the 10 items and it ranges from 0 to 40 where: 0–13 is Low stress, 14–26 is moderate Stress and 27–40 accords High Stress. Items 1, 2, 3, 6, 9, and 10 come under the answer option of Never-0, almost Never+1, Sometimes+2, Fairly Often +3, and Very Often +4. Items 4, 5, 7, and 8 come under the option of Never +4, Almost Never +3, Sometimes +2, Fairly Often+1, and Very Often 0 (Cohen, February 2006). The reliability of the scale is .80.

The **Brief-COPE** is a 28 items tool, which was discovered to measure effective and ineffective ways to cope with different situations of stressful events. «Coping» is defined broadly as an effort used to minimize distress associated with negative life experiences.» It has been divided into 4-point Likert scale-»I haven't been doing» +1, «A little bit» with +2, «a medium amount» with +3 and «I have been doing a lot» as +4. The scale is useful in counseling settings for formulating the helpful and unhelpful ways someone responds to stressors (Rickhard, n.d.). The reliability of the scale is .82. The scale has certain coping styles, which were adopted by the individuals and it can be heads into the following groups:

- Problem-Focused Coping
- Emotion-Focused Coping
- Avoidant Coping.

To start with, the college student phone number was retrieved from individual departments and they were called up to legitimate the main reasons for the study. After that, Google Form then forwarded the survey linkage to the representative of each college with the help of their phone numbers. Thereafter, the students from each college shared the linkage with the help of WhatsApp. Finally, students who view the link they further shared it with their classmates through Facebook and WhatsApp, using the snowball sampling technique.

Table 1 – Demographic Profile of Respondents

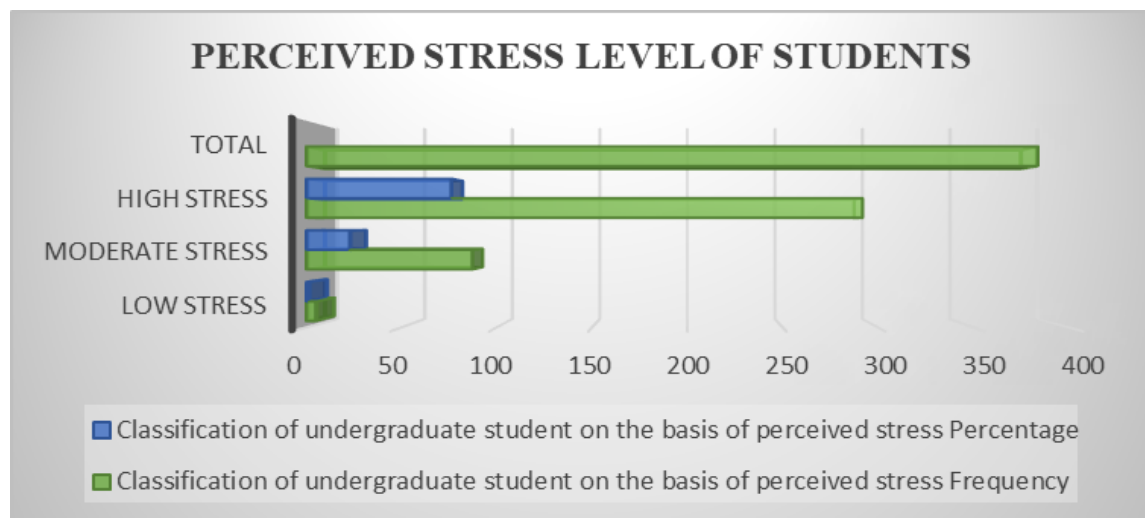
Variables	Frequency	Percentage
Age		
19-20 years	123	32.03%
21-22 years	156	40.63%
23-24 years	105	27.34%
Sex		
Male	195	48.5%
Female	189	47.0%

Source: From field survey

Analysis and Interpretation

For analysis, data were scientifically interpreted.
Pertaining to Hypothesis 1

There is no significant relationship between the effect of lockdown and the perceived stress on the undergraduate students of West Bengal.

**Figure 2** – Showing the perceived stress level of undergraduate students of West Bengal

To test the hypothesis investigators applied Perceived Stress Scale on the selected sample and the responses were recorded and were analyzed using the package of SPSS. figure 2 revealed that the mean of 384 undergraduate students is 192.24 where 76.04% of students were suffering from the highest level of stress, 21.6% by moderate stress and 1.2% of students facing no or lowest level of stress. Joey Man Yee, Kwok, conducted «A Study of the Perceived Stress Level of University Students in Hong Kong». & Douglas, Kei Shing NG., where stress level of undergraduate students was measured it was found that, the stress level of the participants who were mostly from the age group of 18–29 had an average score of 19.02 which was considered to be higher than the standard score ($M = 14.2$; $SD = 6.2$), and thus undergraduate students who belonged

to this age group were found to present a potential higher stress level among those participants (NG2, 3 October 2016).

From the figure 3, in compare to male and female low stress perceived by both the gender, i.e. for male it is 1.0% and for female it is 1.6%, moderate stress is perceived by more in male i.e., 21.2% while for female it is 24.1% and lastly the high stress is perceived by male i.e., 74.9% and for female it is 77.2%. shows that females show higher rates on perceived stress level than males among college students. In relation to gender differences in Perceived Stress levels and coping strategies among college students participants were compared with the help of t-test for independent samples where female students scored higher ($M=20.2$, $SD=4.79$) than males ($M=18.3$, $SD=5.23$) (Anbumalar, July 17 2017).

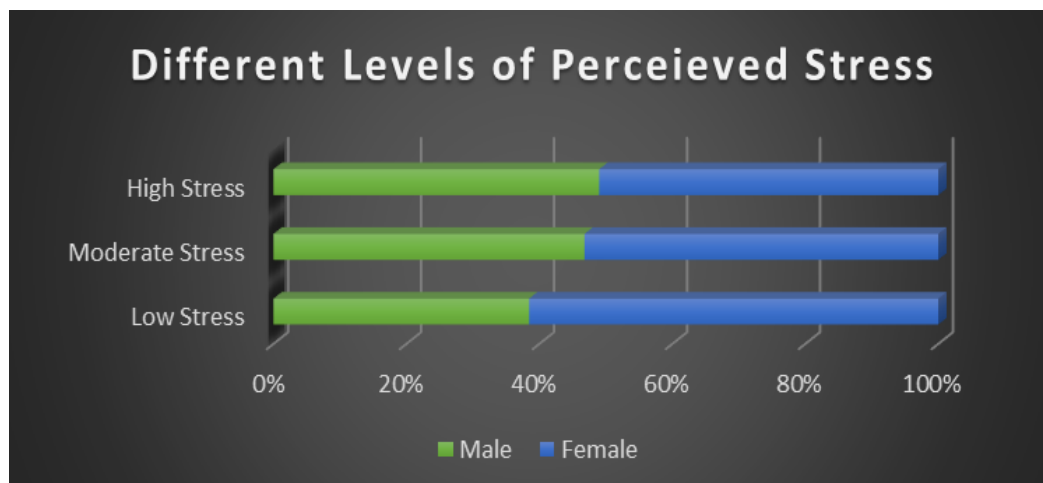


Figure 3 – Showing the different levels of perceived stress of students

Mc.Dougough & Walters, 2001; Matud, 2004 stated that «researchers have contributed to studies that support that female students in general have a higher level of stress, and are more prone to have chronic stress» (Raman, 2020). The data collected from 384 respondents (male=195 and female=189) was analyzed and presented in Tables and Figures.

(Reference to Table 2 data were analyzed)

- In response to statement 1, «In the last month, how often have you been upset because of something that happened unexpectedly?» majority of respondents reported that (male=86.24%, female=86.7%) reported very often.

- In response to statement 2, «In the last month, how often have you felt that you were unable to control the important things in your life?» majority of respondents reported that (male=49.7%, female=60.8%) reported fairly often.

- In response to statement 3, «In the last month, how often have you felt nervous and stressed?» majority of respondents reported that (male=48.7%, female=56.1%) reported very often.

- In response to statement 4, «In the last month, how often have you felt confident about your ability to handle your personal problems?» majority of respondents reported that (male=42.6%, female=42.6%) reported almost never.

- In response to statement 5, «In the last month, how often have you felt that things were going your way?» majority of respondents reported that

(male=42.6%, female=42.6%) reported almost never.

- In response to statement 6, «In the last month, how often have you found that you could not cope with all the things that you had to do?» majority of respondents reported that (male=42.6%, female=42.6%) reported fairly often.

- In response to statement 7, «In the last month, how often have you been able to control irritations in your life?» majority of respondents reported that (male=41.5%, female=41.8%) reported almost never.

- In response to statement 8, «In the last month, how often have you found that you could not cope with all the things that you had to do?» majority of respondents reported that (male=41.5%, female=41.8%) reported almost never.

- In response to statement 8, «In the last month, how often have you felt that you were on top of things?» majority of respondents reported that (male=34.9%, female=36.4%) reported very often.

- In response to statement 9, «In the last month, how often have you been angered because of things that happened that were outside of your control?» majority of respondents reported that (male=63.1%, female=67.2%) reported very often.

- In response to statement 10, «In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?» majority of respondents reported that (male=64.1%, female=68.2%) reported very often.

Table 2 – Showing the statements related to stress that were perceived by students during the pandemic period

SL. No.	Statements	Responses		
1	«In the last month, how often have you been upset because of something that happened unexpectedly»?	«Never»	Male	Female
		«Almost Never»		
		«Sometimes»		
		«Fairly often»	25(12.8)	27 (14.3)
		«Very Often»	169(86.7)	162(85.7)
2	«In the last month, how often have you felt that you were unable to control the important things in your life»?	«Never»	4(2.1)	7(3.7)
		«Almost Never»	2(1.0)	5(2.6)
		«Sometimes»	6(3.1)	3(1.6)
		«Fairly often»	97(49.7)	115(60.8)
		«Very Often»	86(44.1)	59(31.2)
3	«In the last month, how often have you felt nervous and stressed»?	«Never»	6(3.1)	3(1.6)
		«Almost Never»	4(2.1)	6(3.2)
		«Sometimes»	46(23.6)	39(20.6)
		«Fairly often»	44(22.6)	35(18.5)
		«Very Often»	95(48.7)	106(56.1)
4	«In the last month, how often have you felt confident about your ability to handle your personal problems»?	«Never»	2(1.0)	4(2.1)
		«Almost Never»	49(25.1)	38(20.1)
		«Sometimes»	8(4.1)	6(3.2)
		«Fairly often»	83(42.6)	88(46.6)
		«Very Often»	53(27.2)	53(28.0)
5	«In the last month, how often have you felt that things were going your way»?	«Never»	2(1.0)	4(2.1)
		«Almost Never»	49(25.1)	38(20.1)
		«Sometimes»	8(4.1)	6(3.2)
		«Fairly often»	83(42.6)	88(46.6)
		«Very Often»	53(27.2)	53(28.0)
6	«In the last month, how often have you found that you could not cope with all the things that you had to do»?	«Never»	2(1.0)	4(2.1)
		«Almost Never»	49(25.1)	38(20.1)
		«Sometimes»	8(4.1)	6(3.2)
		«Fairly often»	83(42.6)	88(46.6)
		«Very Often»	53(27.2)	53(28.0)
7	«In the last month, how often have you been able to control irritations in your life»?	«Never»	8(4.1)	8(4.2)
		«Almost Never»	81(41.5)	79(41.8)
		«Sometimes»	39(20.0)	32(16.9)
		«Fairly often»	67(34.4)	70(37.0)
		«Very Often»		
8	«In the last month, how often have you found that you could not cope with all the things that you had to do»?	«Never»		3(1.6)
		«Almost Never»		3(1.6)
		«Sometimes»	54(27.7)	59(31.2)
		«Fairly often»	70(35.9)	58(30.7)
		«Very Often»	71(36.4)	66(34.9)
9	«In the last month, how often have you been angered because of things that happened that were outside of your control»?	«Never»	2(1.0)	2(1.1)
		«Almost Never»	2(1.0)	1(.5)
		«Sometimes»	15(7.7)	11(5.8)
		«Fairly often»	53(27.2)	48(25.40)
		«Very Often»	123(63.1)	127(67.2)
10	«In the last month, how often have you felt difficulties were piling up so high that you could not overcome them»?	«Never»	2(1.0)	2 (1.1)
		«Almost Never»	2(1.0)	1 (.5)
		«Sometimes»	15(7.7)	11 (5.8)
		«Fairly often»	53(27.2)	48(25.40)
		«Very Often»	123(63.1)	127(67.2)

Source: Data retrieved from online survey

Therefore, from Table 2, it is being revealed that most participants have perceived stress, which had a great psychological impact on their mental well-being. During COVID-19, several prevention and regulator measures focusing on college students lead them to have different degrees of stress. Stressed students faced numerous health issues, namely physical exhaustion; sleep disorders, irascibility, negative thoughts, and feelings of nervousness (Beata Gavurova, November 28, 2020). Whenever the lockdown period started, the female students were prone to high stress as with online classes they need to perform household duties, which created problem for them to balance between the same. Again, due to sudden overwhelming academic online assignments and sessions many of them did not have the opportunity to continue class due to socio-economic crises at home. A reduction of social interactions, likely caused crisis and distancing measures that lead to lower mental health. Female students who cannot meet with their beloved one for a long time creates an anxiety and tensions about their partners' relationship status. Constant overloading of information in social media creates a disinterest between the things, which they used to perform before the lockdown. A kind of rigid routine activity they were bound to follow within the home environment with no such charm in life that has dampen their mental health. So most of the time they felt upset, even they want to control the

situation but they lacks it, so they were just unable to cope with the situation as a result they felt nervous and stress mostly. Therefore, there is a significant relationship between the effect of lockdown and the perceived stress on the undergraduate students of West Bengal.

Pertaining to Hypothesis 2

There is no significant relationship between the specific pandemic stressor and their impact on the mental health of undergraduate students of West Bengal.

The vast majority of the participants (292/384, 76.04%) detected that pandemics have increased the level of stress and fear and it has created many negative psychological impacts on their mental well-being due to following challenges. For those who indicated increased stress and anxiety during the pandemic a literature was collected through a questionnaire about pandemic-specific stressors and their manifestations across their lifestyle categories and their significant outcomes in their life. These stressors are specific components of stress, which effects the mental health of students like academic workload, isolation or separation from the institution and fear of contagion (Chen, 10 February, 2021). There are many stressors that specifically affect the mental well-being and life style of students like health condition, depressive thoughts, suicidal thought, financial difficulties, change in the living environment and so on (Son, September 3, 2020).

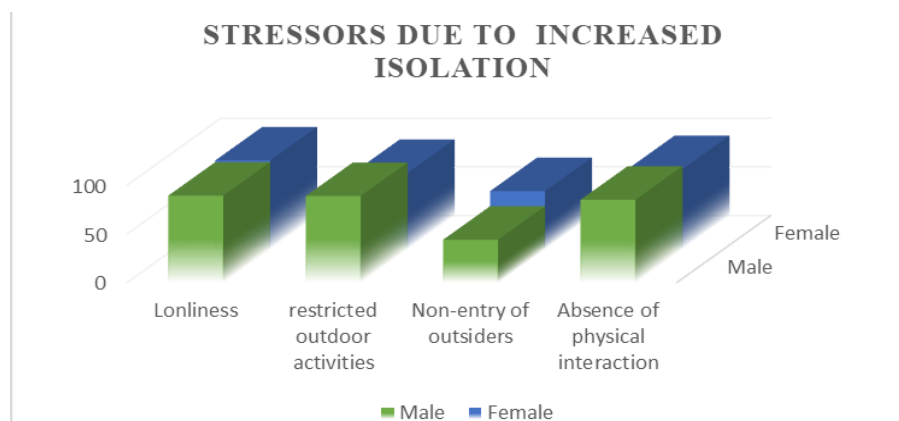


Figure 4 – Showing the stressors due to increase isolation

Increased Isolation: Almost every human being wants a company to lead a successful life. This is especially true for teenagers because they always want to stay in the social group, which have approves their social role. However, the pandemic has created a distance between every human being, which created a high volume of stress among the teenagers. From figure 4, it is found that among the high stress

participants about 89.3% of males and 91% of female strongly agree that the increased isolation in pandemic has created a high degree of loneliness among them. About 88.8% male and 78.1% female strongly agreed that their outdoor activities were restricted which created a monotonous in their home environment. Over half of them, like 44% male and 59.5% of female strongly agreed that nobody was allowed to

make entry in their home as because of fear of viral contamination, which created significant worries due to decreased interaction. In addition, 85% male and 82% female strongly agree that they badly miss their friend's jokes, gossip and face-to-face interaction. It has been estimated that understudies between 18-24 experienced a higher level of loneliness during ex-

treme or mandatory lockdown. On one hand female experienced loneliness while male students prone to diseases like stroke, hypertension, and other heart issues, cognitive issues such as dementia, somatic symptoms including physical exhaustion, headache, insomnia, fatigue, muscle pain and so on (Leodoro, 6 January, 2021).

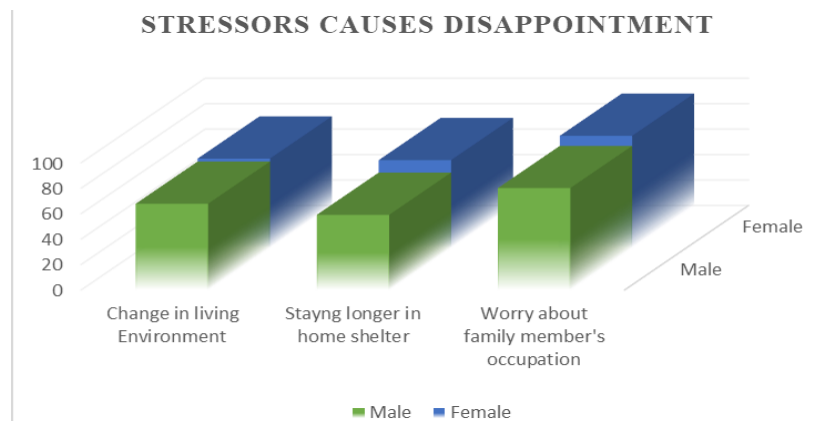


Figure 5 – Showing the stressors causes the feeling of disappointment

Feeling of Disappointment: The learning environment is one of the important factor of learning. Zhai and Du, 2020 stated, that students who remain for a prolonged time in home deprived of their friends and course mates are prone to mental health issues. In University group, work, joint, and combined projects are backbone, but due to global emergencies, the opportunity for students to work with their companion has been squeezed and that is the challenging. As a result, frequent and intense feelings of loneliness, anxiety and isolation is high, owing to the disconnectedness are very common among them. (Danielle Burns, 14 October, 2020). From the figure 5, it is a fund that large portion of participants like 67.7% male and 70% female reported that pandemic has brought a

change in their living environment. About 59% of male respondents mentioned that hanging locked inside for longer duration brought a primary change in their living circumstances. Therefore, it is tiring for them and for girls the ratio is only about 68.8% where they felt disappointment for staying a long in their own shelter as because prior to pandemic many of them after returning from their college they remain in their home. Some participants like 80% male and 87.9% female expressed their worry about their family members whose occupation increased their risk of exposure to COVID-19 such as frontline workers. These constant worries about their family members and relatives have created a mood of disappointment and it affected their mental well-being.

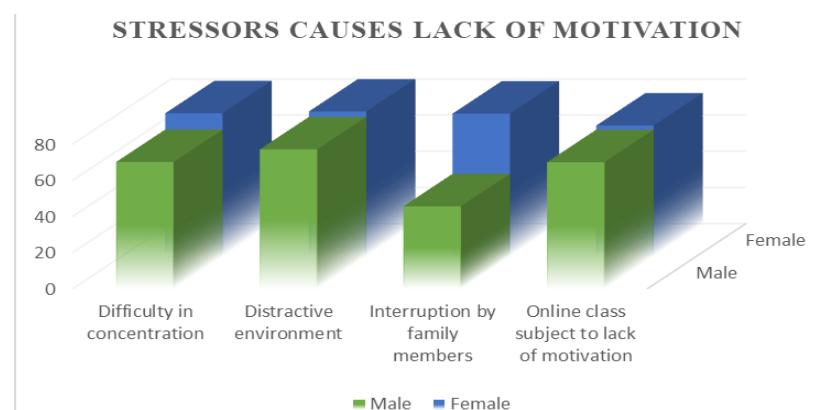


Figure 6 – Showing the stressors causes lack of motivation

Lack of motivation: Figure 6, displayed that 70% male and 79% female participants reported that in directing attention to academic work prone to difficulties due to various sources of distraction and diversion, they mentioned that to home is a place of distraction for study but a suitable place for relaxation. 77% male and 80% female reported it is prone to distractive environment. Participants mentioned that 45.5% male and 78.8% of female reported that they were more susceptible to interrupted by their family members and household chores. Other factors affecting students' concentration were the lack of accountability and social media, internet, and

video games. Again 69.9% male and 72.2% female stated that online classes were subject to distraction due to lack of interactions and prolonged attention to a computer screen. Female learners were prone to more distraction due to household chores and responsibilities. Considering the size of the family, female students' challenges ranges from mild to severe. Gender equalities prevails in the families that were subjected to the preference of male education in compare to female. These restricted their movement towards education and as result, lack of motivation, dissatisfaction, biasness etc were created towards education (Khan, 2021).

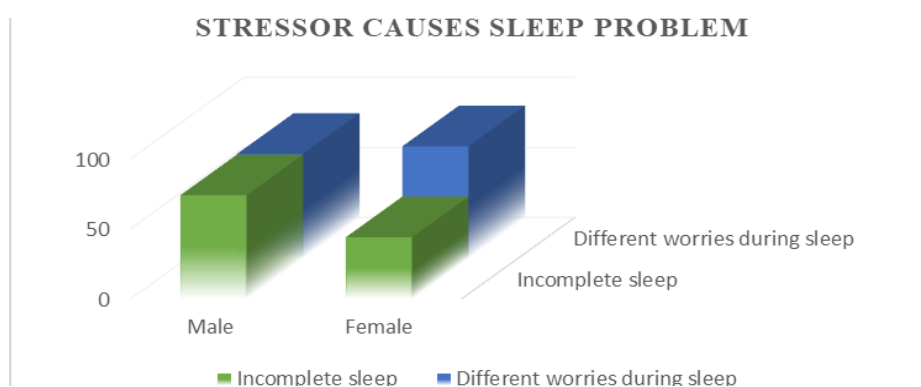


Figure 7 – Showing the stressors due to increase isolation

Sleep Problem: Participants reported that COVID-19 pandemic has brought changes in the sleeping habits. Figure 7 displayed that 74% of male students reported that they tended to stay up later or wake up later in the COVID-19 outbreak due to incomplete sleep while for female it is 44%. As there is no hurry to get ready for college so the time schedule to go to bed and to rise up have been changed. 74.4% male and 79.9% female stated that due to different kinds of worries in their

mind they could not even complete their regular sleep. Change in sleep pattern has significantly found higher in college students who read the news with higher daily frequency. Sleep problems were increased among families who had a higher frequency of going out per week. During this period, they were addicted to online games and unconfirmed news on social media, which affected their psychological wellbeing and required amount of sleep (Xing Wang, 23 November, 2020).

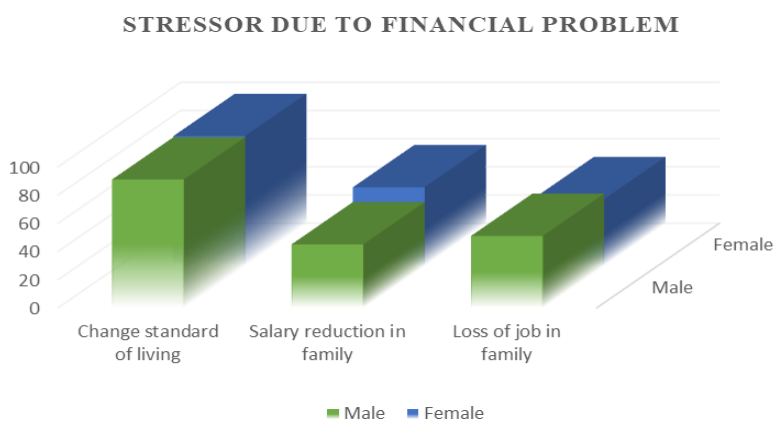


Figure 8 – Showing the stressors due to financial problem

Financial problem: The countrywide lockdown has brought paucity to almost all economic activities. “The International Monetary Fund (IMF) cut India’s development gauge for FY21 at 1.9% from 5.8% assessed in January, notice that the “most exceedingly awful downturn since the Great Depression” will overshadow the financial harm brought about by the worldwide monetary emergency 10 years back. Community for the Monitoring of Indian Economy (CMIE) the general joblessness rate expanded from 8.4% to 23.8%” (Shri Pradeep Ku-

mar, May 1, 2020). Almost every family members have faced at least some amount of financial crunch. From the figure 8 it is found that about 91% male and 91.8% females reported that great financial loss in the family had totally change the scenario of their living standard which created lot of stress and tension in the family. 45% of male and 55.5% female reported the salary reduction of family members. 51% male and 47% female reported about loss of jobs of their family members, which affected their mental well-being.

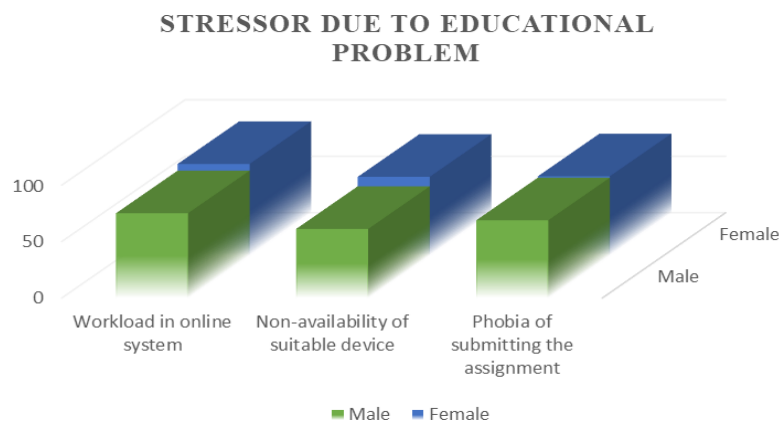


Figure 9 – Showing the stressors due to educational problem

Educational Problem: From the figure 9, it is found that a majority like 75% male and 80.9% female reported increased workload in online system and the deadline for the submission of assignment and project had created lots of stress in the fear of unable to compete with deadline. Many like 61.1% of males and 69.5% of female stated that due to non-availability of suitable device they face lots of trouble for joining the online class even they face problem in recharging their balance, as because it need money. Again 68.8% male and 70% female mentioned that they always have a phobia of not completing the course successfully. All these factors have created a stress on participant that affected their mental well-being. In fact mobile device users in online studies have made many shortcomings like the device were very small to view the content, recharging mobile frequently created a cost issues, create a problem of navigation of input, creates a problem to interact with supplied content, problem for downloading the material etc., cited by Ciprian, Ceobanu. (2014) Mohammad, Ally. (2018), Mohammad Mahmood (2020).

In understudied with this example, we discover lower study-related desire, helpless capacity to adapt to pressure, and weakened passionate prosperity. Understudied experienced vulnerability and worry

about their scholastic future, just as friendly segregation and an absence of supports. Study detailed more elevated levels of pressure and seclusion just as bad temperament during a simultaneous internet-learning experience, contrasted with a customary vis-à-vis learning climate (Rebecca Prowse, April 7, 2021).

Isolation, at such a stressful time, can contribute mental anxiety and have a negative impact on mental health. This loneliness often causes dissatisfaction and slowly they loss interest from their daily life. During the period of hardship, most of them loose social contact with their close one due to restrict physical activities and mostly it empowers them with negative thoughts. So all these created a psychological issue and affected their mental health. Loneliness, isolation distance relationship mostly has a negative impact on students as because the relation and interaction both are insufficient. Female understudies’ experienced high rate of disappointment in compare to male because their dwelling environment has undergone a change due pause of entertainment activities and pursuits, observed through lifestyles with friends and faculty life challenged relational nicely-being the most, whilst family existence opened up new views and generational harmony. Staying at home and decreased physical interest affected the physical health of kids,

missing direct contacts with friends and teachers positioned social members of the family to check, worry of the virus reduced feeling secure and relaxed, and the lockdown-limited participation in society. Again new assessment gear, college students were on the receiving give up of too many adjustments in too brief a period. Students who are used to a set calendar via the educational 12 months had to revel in first-rate uncertainty when it came to studying desires, the possibility of the behavior of exams, and the evaluation modes, to call only some. Uncertainty hampers the incentive of the student to perform due to the fact there are not any exams, the exams are little. Therefore, when the students do not get to look outcomes for his or her efforts, their motivation certainly comes down. Many of them became very casual with their studies as they know very well that the exam has now become a kind of ritual practice in pandemic academic calendar and it is an open book system. So they do not have any urge to perform well in the exam and they do not have any interest in the online class as it lacks various social

skills. Traumatic events such as those caused by COVID-19 outbreak can produce psychological distress and anxiety symptoms, which negatively affect sleep quality. Therefore, there is significant relationship between the specific pandemic stressor and their impact on the mental health of undergraduate students of West Bengal.

Pertaining to Hypothesis 3

There is no significant relationship between perceived stress and coping strategies adopted by undergraduate students of West Bengal.

The Brief-COPE is a 28 items designed to measure effective and ineffective ways to cope with a stressful life event. «Coping» is defined broadly, as an effort used to minimize distress associated with negative life experiences. The scale can determine the primary coping style of any individuals and it can be heads into following groups:

- Problem-Focused Coping
- Emotion-Focused Coping
- Avoidant Coping.

Table 3 – Showing different patterns of coping strategies used by students

Levels				Different Coping strategies used by students (%)						
Variables	Low	Medium	High	No. of students M F		No. of students M F		No. of students M F		Mean and SD
Problem-Focused Coping	17-19	20-23	Above 24	99 67.3	135 93.1	40 27.2	8 5.5	8 5.4	2 1.4	21.36 ±1.592(Male) 20.79 ± 1.276(Female)
Emotion-Focused Coping	29-30	31-34	Above 35	28 19.0	38 26.2	97 66.9	113 76.9	6 4.1	10 6.9	31.82±2.006(Male) 32.19±1.991(female)
Avoidant Coping	15-18	16-19	Above 20	59 40.1	101 69.7	47 32.0	40 27.6	8 5.4	2 1.4	16.95±3.172(Male) 15.33±1.871(Female)

Source: Data retrieved from the online survey and analysed with the help of SPSS Software

Students have adopted different coping techniques to reduce or manage stress. They gave responses for 28 techniques ranging from never to a lot. From the table it is found very few have accepted the first strategy i.e., Problem Focused Coping Strategy with Mean and SD for Male are 21.36 ±1.592 and Female with 20.79 ± 1.276 respectively. Items like 2, 7, 10, 12, 14, 17, 23, and 25 coincides with such a strategy. Such strategy is least preferred by the female in compare to male that indicates the lack of practical approach more in female in compare to male (Smriti Sinha, 20 February, 2018). Moderately 27.2% of Male and 5.5% of female support such

strategy where they move by taking some useful suggestions from others to improve the situation, trying hard to improve the situation, trying to visualize the situation from different perspective. They were more move by problem-focused than adjustment focused. So the predictive positive outcome is very less. Most of the students prefer the Emotion-Focused Coping with Mean and SD 31.82±2.006 for Male and 32.19±1.991 for female. Matud in 2004 stated gender differences in stress. Female experience more mental misery than men and their adapting style is more feeling centered than that of male (Garcia, 2018). Female are more probable than men to adapt to emotion-

focused practices and to look for social help and the investigation of who found that female who trusted in others and unveiled an individual issue were decreed to be preferable composed over the female who hushed up about the issue (Carpenter, April, 2013). Items 5, 9, 13, 15, 18, 20, 21, 22, 24, 26, 27, 28 are related to Emotion Focused coping strategies where they seek emotional support from others, relief of unpleasant feelings, they criticize themselves for the situation, they seek comfort from others, religious or spiritual help, self-blame, they accepted the reality as it, many relieving the negative feelings by sharing with others, items were mostly preferred by the students the least preferred the making of jokes or fun of the situation. However, female students mostly undertaken spiritual or mediating strategies in compare to male and the male students preferred for accepting the reality and accepting their own shortcomings as to compensate with stress. Very few students have adopted the third strategy i.e., Avoidant Coping Strategy with Mean and SD for Male are 16.95 ± 3.172 and Female with 15.33 ± 1.871 respectively. Items 1, 3, 4, 6, 8, 11, 16, 19 coincides with such strategy and most of them favoured to devote their mind to useful activities like book reading, watching movies, or television in home, playing games or doing assignment or rather sleeping to distract themselves from stress and very less respondent have taken the help of substance like alcohol or drugs. However, for male some of them were habituated to smoking to deal with stress (Heike Eschenbeck, March 2007). Depend upon the different socio-economic background students' use different types of Avoidant coping strategy. Students preferred more emotion focused, actively focused, emotional support, positive reframing than self-blame, substance use, denial, venting. Therefore, there is a significant relationship between perceived stress and coping strategies adopted by undergraduate students of West Bengal.

Recommendations

Due to Covid 19 situation these undergraduate students suffers a lot from stress that affected their mental health status. So during such situation emotional support need to be provided by the educational stakeholders. Under every university, online guidance and counselling support need to be delivered to those who faced such state of affairs. Parents need to keenly observe their youngsters any such behavioral change and dealing with them empathetically in resolving their issues. They need to be engaged in those home activities, which were preferred by them before the lockdown to distract their negative emotions. Celebrate each events at home to bring chang-

es in their mood and to maintain a wise connection with social life. Encourage them for regular simple indoor physical exercises. This will also solve their sleep problem. Avoid the discussion about affected and sickness of people instead of those who were recovered from it. They should be encouraged to form an online group so that they can communicate and interact among them as it was in the classroom.

Conclusion

College students have been greatly affected by the trauma of COVID 19 epidemics. The highlights of this investigation indicated that psychological changes has greatly taken place in them, which is vulnerable for the future generation. Our discoveries recommend an extensive adverse consequence of the COVID-19 pandemic on an assortment of scholarly, wellbeing, and way of life-related results. From the study it is being found that 76.04% of students were suffering from the highest level of stress, 21.6% by moderate stress and 1.2% of students facing no or lowest level of stress. By referring to the various web studies in the midst of pandemic, it was tracked down that a greater part of these members was encountering expanded pressure because of COVID-19. It was found that among the high stress participants about 89.3% of males and 91% of female strongly agree that the increased isolation in pandemic has created a high degree of loneliness, disappointment, lack of motivation, financial crunch, new augmentation of education etc., all worked as a stressor for them which creates a crux for them to gauge with the situation. In addition, consequences of the PSS showed high degrees of pressure among our members. Trouble in concentrating, much of the time communicated by our members, has recently been displayed to unfavorably influence understudied' trust in themselves which has because of expanded pressure and emotional well-being. Past explores announced about the undergrad populace to have self-destructive contemplations outside the pandemic circumstance. Besides, except for high-burn-out classes. Although in this examination members explicitly referenced a few factors like sensations of forlornness or expanded segregation, weakness, vulnerabilities, absence of inspiration unpredictable rest design different results that were seen to be affected by the COVID-19 pandemic may likewise go about as supporters of upsetting considerations and various procedures of managing it through some compelling and ineffectual adapting systems. At last, to find out the relation between perceived stress and undertaken coping strategies it revealed that females were mainly adopted Emotion-Focused Strategy than the other it is because it is liable to alter the situation of stressed

person. It is a bipolar technique as it help with emotions and solutions and mostly it fits with individual needs. So future work can zip profoundly on the job of various outskirts to help our childhood age.

Disclosure Statement

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References

- Kaur, G., & Mishra, A. (2020). PM NARENDRA MODI'S APPEAL ON FIGHTING AGAINST COVID-19: A STUDY. *Journal of Content, Community and Communication*, 12.
- Rahman, U., Shah Nawaz, M. G., Khan, N. H., Kharshiing, K. D., Khursheed, M., Gupta, K., & Uniyal, R. (2021). Depression, anxiety and stress among Indians in times of Covid-19 lockdown. *Community mental health journal*, 57(1), 42-48.
- Wilson, W., Raj, J. P., Rao, S., Ghiya, M., Nedungalaparambil, N. M., Mundra, H., & Mathew, R. (2020). Prevalence and predictors of stress, anxiety, and depression among healthcare workers managing COVID-19 pandemic in India: a nationwide observational study. *Indian Journal of Psychological Medicine*, 42(4), 353-358.
- Cohen, Sheldon. (2006). Perceived Stress Scale. Friend National Resource Centre. Retrieved from file:///C:/Users/DEBLINA/Downloads/pss-4%20overview.pdf.
- <https://novopsych.com.au/assessments/formulation/brief-cope/>.
- Kwok, J. M. Y., & Ng, D. K. S. (2016). A study of the perceived stress level of university students in Hong Kong. *International Journal of Psychological Studies*, 8(4), 91-106.
- Jadhav Vikram R., Bagul Tushar D. & Aswal Sagar R. Covid 19 Era – Students' Role to Look at Problems in Education System during Lockdown Issues in Maharashtra. *International Journal of Research and Review*, Vol.7; Issue: May 2020 2.
- Anbumalar, C., Dorathy, A. P., Jaswanti, V. P., Priya, D., & Reniangelin, D. (2017). Gender differences in perceived stress levels and coping strategies among college students. *The International Journal of Indian Psychology*, 4(4), 22-33.
- Raman, Thumchuichan. (2020). Gender differences in perceived stress among select college students in Manipur. *International Journal of Creative Research Thought*.
- Brough, K. (2015). *Factors associated with college students' perceived stress* (Doctoral dissertation, Colorado State University).
- Yang, C., Chen, A., & Chen, Y. (2021). College students' stress and health in the COVID-19 pandemic: the role of academic workload, separation from school, and fears of contagion. *PloS one*, 16(2), e0246676.
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of medical internet research*, 22(9), e21279.
- Labrague, L. J., De los Santos, J. A. A., & Falguera, C. (2020). Social and emotional loneliness among college students during the COVID-19 pandemic: the predictive role of coping behaviours, social support, and personal resilience. *Research Square*.
- Burns, D., Dagnall, N., & Holt, M. (2020, October). Assessing the impact of the COVID-19 pandemic on student wellbeing at universities in the United Kingdom: A conceptual analysis. In *Frontiers in Education* (Vol. 5, p. 204). Frontiers.
- Khan, M. A., Kamal, T., Illiyan, A., & Asif, M. (2021). School Students' Perception and Challenges towards Online Classes during COVID-19 Pandemic in India: An Econometric Analysis. *Sustainability*, 13(9), 4786.
- Wang, X., Chen, H., Liu, L., Liu, Y., Zhang, N., Sun, Z., & Li, M. (2020). Anxiety and sleep problems of college students during the outbreak of COVID-19. *Frontiers in Psychiatry*, 11.
- Sinha, S., & Latha, G. S. (2018). Coping response to same stressors varies with gender. *National J Physiol Pharm Pharmacol*, 7, 1053-1057.
- Prowse, R., Sherratt, F., Abizaid, A., Gabrys, R. L., Hellemans, K. G., Patterson, Z. R., & McQuaid, R. J. (2021). Coping With the COVID-19 Pandemic: Examining Gender Differences in Stress and Mental Health among University Students. *Frontiers in psychiatry*, 12, 439.
- García, F. E., Barraza-Peña, C. G., Włodarczyk, A., Alvear-Carrasco, M., & Reyes-Reyes, A. (2018). Psychometric properties of the Brief-COPE for the evaluation of coping strategies in the Chilean population. *Psicologia: Reflexão e Crítica*, 31.
- Carpenter, A. (2013). Gender differences in coping styles or just individual differences in the stress appraisal process.
- Raj Utsav, INDIAN EDUCATION SYSTEM IN FIGHT AGAINST COVID-19 PANDEMIC. *International Journal of Creative Research Thoughts (IJCRT)*, Vol.8; Issued: July 2020.
- Kapasia Nanigopal, Poul Pintu & Chouhan Pradip. Impact of Lockdown in Learning Status of Undergraduate and Postgraduate Students during COVID 19 Pandemic in West Bengal. *Child Youth Services Review*.2020 Sep; 116:105194.
- Jena Pravat Kumar. Impact of Covid 19 on higher education in India. *International Journal of Advanced Education and Research*. Vol.5; Issue3; 2020; Page No.77-81.
- Burgess Simon & Sievertsen Henrik Hans. Schools, skills, and learning: The impact of COVID-19 on education. Centre for Economic Policy Research, Issue: 1 April 2020.
- Jena Pravat Kumar. Online learning during lockdown period for Covid 19 in India. *International Journal of Multidisciplinary Educational Research*. 2020c; 9, 5(8):82-92 7.
- Jarus O. Twenty worst pandemics in the world. [Internet.] 2020. [updated 2020 May; cited 2020 May 15]. Available from <http://livemedicine.com/worst-epidemicsand-pandemics-in-history.html>

Definition taken from Webster dictionary. [Internet.]. Available from <http://www.merriam-webster.com>.

International Health regulation (2005). 3rd edn. WHO Available from [Internet] <https://www.who.int/ihr/publications/9789241580496/en/>

Madhav N, Oppenheim B, Gallivan M, et al. Pandemics: Risks, Impacts, and Mitigation. In: Jamison DT, Gelband H, Horton S, et al., editors. Disease Control Priorities: Improving Health and Reducing Poverty. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / the World Bank; 2017 Nov 27. Chapter 17. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK525302/> doi: 10.1596/978-1-4648-0527-1_ch17.

Eschenbeck, H., Kohlmann, C. W., & Lohaus, A. (2007). Gender differences in coping strategies in children and adolescents. *Journal of individual differences*, 28(1), 18-26.

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THE DETERMINING FACTORS OF JUVENILE SUICIDE – CASE OF KYRGYZSTAN

In recent years, there is a rapid pace of growth in suicide and attempted suicide among youth in Kyrgyzstan, a small Central Asian country. The study aims to predict socio-economic, psychological, and other contextual determinants of suicide actions among youth based on a qualitative research through face-to-face interviewing. The research limits its scope with only the southern region of Kyrgyzstan, Jalal-Abad, where the suicide and attempt to suicide among youth in relation to general population was higher than other regions of the country. Nationwide research for the suicide among youth in Kyrgyzstan can be planned for future studies as a second phase of the project. Methods: For this research, parents, other close relatives, schoolteachers, neighbors and peers of victims are involved into a face-to-face interview. Additionally, the research also interviewed youth who chanced to survive after an attempt to suicide. Results: The results of the research indicate that many factors such as, social, economic and psychological that influence suicidal behavior among youth. Conclusion: However, the most influential were found to youth's relationship with parents, teachers and peers; nonexistence of both parents (divorced, died) in the family, contagion, family income, psychological situations of youth and depression.

Key words: Suicide, youth, parental affection, parental relationship, public policy, maltreatment, family income, peer relationship, teacher, and depression.

Introduction

In recent years, there is a rapid pace of growth in suicide and attempted suicide among youth in Kyrgyzstan. Based on the number of reports, the suicide is considered as a major cause of death among young people (Bridge, J. A., Goldstein, T. R., and Brent, D. A., 2006; Lazarus and Kalafat, 2001). For instance, in Jalal-Abad province annually 20 to 25 juveniles on average commit suicide. On the other hand, on average 10 to 15 juveniles are killed in traffic accidents per year (which is considered to be the deadliest killer of children) (Police report, 2014). Various concerned institutions and organizations discussed a number of reasons for defining sources of suicidal behavior among minors without specific scientific evidence. This study questioned and discovered several factors pushing juveniles to suicidal behavior through case analyses method. It is safe to claim that unattended minors are at the main risk group. It is a fact that parents of most families in the southern regions have left their children in the care of grandparents or other relatives and have migrated to Russia due to lack of job opportunities in Kyrgyzstan. Thus, a lack of parental affection and maltreatment by guardians can lead children to the suicidal behavior. Moreover, structural family problems, such as polygamy, divorce, sexual harassment and treachery are considered as major pushing factors.

Involvement and failure of incompetent authorities in the process of prevention of suicide can be considered as another harming factor leading the youth to the suicide. De facto, the police is the accountable for suicide prevention among youth in Kyrgyzstan. Preventive police measures represented through lectures in schools and among teenagers illustrate ineffectiveness and wrongfulness of this approach, since police is not an authority which can provide youth with necessary psychological support before and after the suicide attempt. Also, some officials and members of local communities argue that by organizing lectures on suicide among teenagers, lecturers unconsciously put an idea of suicide into youths' mind, so that it can push them toward this behavior instead of saving them.

This study aims to carry out a qualitative research of the problem based on the method of interviews with relatives (parents, relatives), friends, neighbors, teachers, and other relevant bodies for the determination of socio-economic, psychological, and other causes of suicide among juveniles. Face to face interviewing allows us to obtain a deep understanding on root causes of the suicide in question through asking open-ended questions. This study limits its scope of research with only Jalal-Abad province, where an attempt to suicide and completed suicide among children were quite high in relation to the general popu-

lation. A nationwide study of suicide among young people in Kyrgyzstan can be scheduled for further study as a second stage of this work. For this study, the face to face interview was deployed to parents, close relatives, school teachers, neighbors, police inspectors and peers of victims. Moreover, the study analyzes interviewees of juveniles survived the suicide attempt. The focus of the study is given on the socio-economic and psychological factors that determine the suicidal behavior among juveniles. These factors include the relationship of juveniles with their parents, teachers and peers and the existence of both parents (divorced, died, etc.) in the family, number of children in the family, other family problems, family income, psychological state and depression.

Literature

Suicide and attempted suicide among adolescents has become a major health problem in the world (Lazarus and Calafat, 2001; Bridge et al., 2006; Duarte and Molina, 2006; Zotov, 2011). Bridge et al. (2006) argue that suicide is one of the leading causes of death among young people. Suicidal behavior among juveniles is explained by various factors, such as mental and physical disorders, personality and psychological characteristics, family factors, biological, infection, access to lethal agents, intervention and clinical management. For example, Lazarus and Calafat (2001) argue that suicidal behavior is a culmination in spite of a sequence of life course, where the risk factors caused by a variety of spheres of influence. Consequently, suicidal behavior is not only the result of current life stressors, but rather a process of erosion of suicide (Lazarus and Calafat, 2001).

On the other hand, Rozanov (2013) argues that suicide is hereditary. According to Rozanov (2013), family history of suicidal behavior can be fixed with common genes, or inherited from a common family environment. Other scientists have also found that a family history of suicidal behavior can predict suicide attempt (Bridge et al., 2006). Many scientists have shown that suicidal behavior is a genetic which transfers from parents to children through genes (Grossman C. David, B. Carol Miligan, and Richard A. Deyo, 1991; Bridge et al., 2006). On the other hand, Bridge et al. (2006) see family-environmental factors as sources of suicide attempts among adolescents. These factors include family problems (lack of communication among family members, poor relations between family members and children, family disintegration), loss (death, divorce, spouses, parents), family relations (the quality of parent-child relationship), and abuse (Bridge et al., 2006, pp. 379-380). Lack of parental control, miscommuni-

cation and negative relationship between father and child, are also the factors leading to suicidal behavior among juveniles. On the other hand, the cohesion of the family, a positive relationship with the parents of the child, joint pastime, parental supervision, and high positive parental qualities are protective factors against suicide attempts (Bridge et al., 2006, p.380).

Furthermore, Nock, M., Hwang, I., Sampson, N. and Kessler, R. (2010) argue that the suicidal behavior is closely associated with all types of mental disorders and the risk of suicide for people with mental disorders is higher for them. Bridge et al. (2006) also point to the importance of the psychological aspects of suicide attempts among juveniles. Authors claim that, a psychological explanation for suicide include certain determinants, such as personality disorders/impulsive aggression (tendency to react to frustration or provocation with hostility or aggression), neuroticism (temperamental tendency to experience longer and heavy range of negativity in response to stress), low self-esteem and depression and hopelessness because of depression, perfectionism (unrealistic high expectations), and not heterosexual orientation (Bridge et al., 2006; pp. 378-379).

On the other hand, Molina and Duarte (2006) in their piece review the economic perspective of juvenile suicide. Coming from the point that bigger cohort size develops greater suicide rates because of employment competition. Molina and Duarte (2006) claim that the economic pressure and its consequences imply huge psychological anxiety that affect individual behavior and thus raise the possibility of suicide. The founders of economic suicide theory, Hamermesh and Soss (1974), earlier had claimed that the response to an unemployment in hard times develop suicidal behavior, especially among young age groups.

Another important finding among causes of suicidal behavior was the use of psychoactive and psychotropic substances that may predict suicidal behavior (Molina and Duarte, 2006; Zorogly et al., 2003; Grossman et al, 1991). According to Molina and Duarte (2006, p. 423), the consumption of alcohol and illicit drugs among adolescents leads to suicidal behavior that include all incremental steps of suicidal thoughts and attempts, actual suicide, and suicide, ending with serious injuries or death. Moreover, Grossman et al. (1991, p. 872) in his study emphasizes that the rate of alcohol consumption is also a factor for suicidal behavior, where he has proved that weekly consumption of strong alcoholic beverages is significantly associated with suicide attempts among Indian adolescents. Similarly, Zorogly et al., (2003) show that overdosing substance was revealed as one of several tools mainly used to perform an attempted suicide among adolescents.

The consensus among scholars and practitioners shows that suicidal behavior among adolescents is contagious (Mercy et al, 2001; Gould, 2001; Gould, M., Jamieson, P. and Romer, D., 2003). Gould et al. (2003) argue that there is an ample evidence in the literature on the effect of several tools, such as lectures, media, show that suicide is «contagious». Suicide quickly and spontaneously spread among juvenile groups. Similarly, in southern Kyrgyzstan, the police, social workers, parents and education departments were reportedly expressing concerns that such suicidal behavior is contagious and opposed to hold lectures and seminars on suicide prevention in public schools.

Furthermore, Bandura's (1977) theory of social learning is another aspect clearly indicating suicide as contagious. Social learning theory states that our behavior is observed, formed and learned through modeling (Bandura, 1977). Gould (2001) in his study found that the amount of the increase in suicides after broadcast stories about suicide proportional to the amount, duration and intensity of the media that was broadcast this topic. Gould et al. (2003) in their study did a content analysis of 10 top newspapers and data from the Internet Movie Database (IMD) and found that 60% of newspapers posted their suicide related stories in the first nine pages, and in recent decades illustration of suicidal behavior in the movies has occurred nearly in 1 out of 10 movies. Therefore, public authorities must take into account in the process of preparation, management and development of recommendations for the media and other means. There is a need for a strong state policy regulating broadcasting, lectures and seminars on these topics.

Another important aspect in suicide prevention among juveniles is clustering. Victims of suicidal behavior are the juveniles who are living within the same geographical proximity and closeness in time with previous victims (Johansson, L., Lindqvist, P. and Eriksson, A., 2006; Wilkie, C., Macdonald, S. and Hildahl, K., 1998; Gould, M., Wallenstein, S., Kleinman, K., O'Carroll, P. and Mercy, J., 1990; Gould, M., Petrie, K., Kleinman, M. and Wallenstein, S., 1994). There are two types of clusters, statistical clusters and clusters of infectious (Johansson et al., 2006). The statistical cluster, a predetermined number of cases can not be part of the definition, because the clustering base will depend on the size and speed of suicide study population. In order to determine the cluster growth it should be statistically significant, and not just any rise above average. On the other hand, the cases of infectious clusters should be three or more (Johansson et al., 2006). Johansson et al. (2006) in their work analyzed two clusters that occurred in two different areas. They found that juveniles from each cluster knew each other and were great similarities between the cases.

Moreover, Wilkie et al. (1998) have utilized the methodology of case analysis to cluster the completed and attempted suicide in time and place where the 6 completed and 19 attempted suicides were committed during the two and three months of periods respectively in a small community (Manitoba, France). Analysis of each suicide case showed that completed suicide behaviors tend to have some common characteristics clustered in time, being aware of others' prior suicide attempt, and having some medical illnesses (health problems). Although this study has come up with outcomes which are less generalizable, they show that previous suicidal behaviors were to have some contagious effect on others in close environment.

Therefore, the infectiousness of suicide may contribute some juvenile suicide in the cluster (Johansson et al., 2006). Similarly, Gould et al. (1990) investigated the suicide according to the National Center for Health Statistics on the basis of age characteristics in the space-time clusters. Based on the four local units (i.e., county, city, etc.), and five units of time critical (i.e., 7 days, 14 days, etc.) they found that clustering is observed mainly in a younger age groups (15-19 and 20-24 year olds) in the three critical time units. Thus, clustering is an important tool in developing policies for suicide prevention among juveniles.

Methodology

The current research was conducted in Jalal-Abad province, in August 2014. Suicide cases committed in four districts of the region during the years 2011-2012 were chosen for the research. Methodologically, newly committed suicide cases are not suggested to be studied since parents and other relatives are less likely to provide true answers for the questions because of their loss of either son, daughter or sibling. Thus, those cases, which have occurred within the last twelve months, were not included into the study. The interviews were conducted at victims' homes with an assistance of local juvenile police officer, who did not take part in the process of interviewing. Since suicide culturally accepted as a shameful behavior for the family, people try to keep everything in secrecy. Consequently, participation of a police official is vital for productive communication with parents and relatives of the victims. It is safe to claim that assistance of police in an interview might negatively cause respondents to give correct answers. However, without juvenile police assistance victims' parents, friends and relatives would not come for a contact. Juvenile police inspection is a unique police force at the Ministry of Interior of the Kyrgyz Republic, which directly works with juveniles, and each police officer serves closely located 7-8 schools.

The data for the analysis of this study consist of interviews with parents, close relatives, teachers, neighbors, and relevant authorities (police, social protection agency and local government). A questionnaire with 22 questions have been carefully prepared through an elaboration of suicide literature and findings of previous studies in this field. During the interviews, 19 from the 23 suicide cases were reached out and more than 80 people were interviewed. For each case, approximately 4-5 persons were interviewed, which includes parents or other close relatives (grandparents, siblings), neighbors, and teachers at school. The participants of the interview were explained their rights and were guaranteed with the consent that their personal information under any circumstances will not be disclosed and will be stored anonymously.

According to the results, it is found that for the year 2012 in all 20 cases of suicide among juveniles were reported in 4 regions of Jalal-Abad province. The analysis illustrate that all facts registered in 4 regions were in close range, and in the interview in many cases, the parents of the victims claimed that their children had heard about other facts of past suicide cases. Consequently, based on the results and the literature it can be argued that the fact of suicide among juveniles can be contagious.

Results

In this qualitative research, overall 19 (20) suicide cases were studied through interviews of 4 or 5

associated people of each suicide victims. As early mentioned, around 80 people were interviewed for the study. Based on the demographic characteristics, youth that exposed to the suicidal behavior differ from each other based on their gender, age, ethnicity, and family structure. Results showed almost half of the victims were males (53%) while other half were females (47%) in particularly studied suicide cases (see Table 1). The suicidal behavior among teenagers is slightly different between genders which means that the suicide is more likely to happen among males rather than females, but equally puts both gender in danger. It is reasonable to have both genders equally represented by the rate of suicide since social, health, and other contextual problems affect all genders in the same manner. It is noteworthy to note that another difference in suicide based on gender is a rate of survival. Suicidal behavior is deadly among males since they never survived which might be explained by physical and psychological distinctions from females (strong physical capabilities and strong mindedness toward suicide). On the other hand, observations showed that 44.5% females survived the suicide when other 55.5% ended up with committing it. Chances for survival among females might also be articulated to gender distinctions inherent in females. One of the female victims survived the suicide when she hanged herself with the rope while two others survived when one attempted by throwing herself out of running car and another survived when she had thrown herself into a river from a bridge.

Table 1 – Gender differences in juvenile suicide cases

Gender differences Number/percent of victims	Male		Female		Total	
	No	%	No	%	No	%
Overall suicide	10	52.64	9	47.36	19	100.0
Completed suicide	10	66.66	5	33.33	15	100.0
Attempted suicide (survived the suicide)	0	0	4	100.0	4	100.0

One of the interesting points in suicidal behavior among youth in Kyrgyzstan is a way how they commit the suicide. Almost 90% of the youth committed the suicide by hanging themselves with a rope. This means that hanging themselves with the rope is the most preferred way applied by juveniles for the suicide. Among all cases, only two of high school students attempted to suicide by poisoning or throwing herself out of the car or to the river. Another interesting moment in studied cases is that those juveniles who had chosen other methods rather than hanging themselves have managed to survive in contrast to those who had hanged with the rope.

The current study clearly shows that more than 95% of juveniles who committed the suicide by hanging themselves did not survive. To study the “hanging” as the mostly applied way and inherent in youth mind might be a good suggestion to others for further researches. Adedoyin and Salter (2013) indicate that committing the suicide by using firearms is a number one method applied to kill himself/herself among African American adolescents in the US. This way of committing the suicide might be explained by the highest rate of availability of firearms in American population. However, selection of one among other several ways to kill themselves could be also explained by cultural issues.

Table 2 – The Determinant factors and dependent variables in juvenile suicide cases

Determining factors	Dependent variables	
	Completed suicide (Died victims)	Attempt to suicide (Survived victims)
Family determinants – Family divorced – Parents died – Parents migrated (labor) – Parents occupation – Relationship with parents (lack of contact with parents) – Parents maltreatment – Parents depression – Parents substance abuse – Parental suicide	– 3 – 0 – 0 – 12 parents occupied (only 1 single mother not occupied) – 5 good relationships, 4 not good enough relationships, 3 worse relationships (7 discontact) – 6 parents maltreatment – 2 parents depression – 3 parents substance abuse – 0	– 1 – 1 – 1 – 4 parents occupied (1 parent retired) – 2 have good relationships, 3 not good and worse relationships (4 discontacts with parents) – 2 parents maltreatment – 2 parents depression – 2 parents substance abuse – 1 mother
Personal determinants – Prior suicide ideation – Prior suicide attempt – Mood disorder – Substance use disorder – Conduct disorder (staying away from home/school et.c.) – Letter left after suicide – Anxiety – Post-traumatic stress disorder – Mental illnesses – Physical disability	1 prior suicide ideation, 2N/A No prior suicide attempt, 2N/A 8 mood disorder- closed, anger	2 prior suicide ideation 1 prior suicide attempt 4 mood disorder, closed, anger
Public institutions intervention – Police – Local authorities – Social workers	– 12 – 2 – 0	– 5 – 1 – 0
Demographics – Gender – Age – Grade – Ethnicity – Number of kids in family – Economic situation	– 9 Males, 5 Females – 1(11), 2(12), 1(14), 3(15), 2(16), 3(17), 1 (18) – 1(4 th), 1(5 th), 1(7 th), 2(8 th), 7(9 th), 1 (11 th) – 5 Uzbek, 9 Kyrgyz – 3 only child, 1(2 kids), 4(3 kids), 3(4 kids), 1(5 kids), 1(7kids) – 5 below average, 8 satisfied	– 2 Males, 4 Females – 2(14), 2(15), 1(16), 1(18) – 6(9 th grade) – 1 Uzbek, 4 Kyrgyz, 1 Korean – 1 only child, 3(3kids), 1(4 kids), 1(5 kids) – 3 below average, 3 satisfied

Moreover, results of this study indicate that most of the juvenile victims were psychologically constrained and introverted. Also, 50% of suicide victims had lived with a stepfather or were members of a divorced family, or had lived in the care of relatives. Almost 95% of the victims lived in families without economic hardship, in a sufficient family. More than 70% of the victims had been in a poor or very complex relationships with their parents, and 75% of the victims have had problems in the relationship with at least one of the parents.

Conclusion and policy recommendations

The literature indicates that juvenile suicide requires an integrated approach to solutions and prevention. In addition, victims and their families are in need of psychological assistance. The analysis of this study reveal that after the suicide of a juvenile on the scene and aftermath of the incident mostly show up only police officers and after teachers, and in some cases representatives from the local administration. This analysis indicates that in general, neither the police officers nor the teachers are competent to work

with victims of suicide and their intimates. Therefore, it is necessary to develop a comprehensive action plan which should include health care workers, social services, psychiatrists, and also should work on revival of the family psychologists. Moreover, it is necessary to develop a national strategy for suicide prevention.

If you look at the legal aspect of the matter we can see not only the failure of the responsible authorities, but also parents themselves. Therefore, we must consider the parents' responsibility. Here, for example, in the Criminal Code of the Kyrgyz Republic stated that the incitement to suicide - a crime in which the object of the crime is the life of another person. The objective aspect of the crime is the incitement to suicide or to attempt to suicide by threats, cruel treatment or systematic humiliation of the human dignity of the victim. But in each case, the parents did not want or did not take the blame and responsibility for the commission of negligence in relation to their child victims. So far, research address mostly the issue of lia-

bility of third parties, such as teachers, police. But, as the parents are close relatives of the first degree of the victim, there is belief in the society as that they can not be the source and cause of suicidal behavior of the juvenile. It may be noted that the issue of criminal responsibility for incitement to suicide causes great difficulties in enforcement activities (Chukaeva, 2010). Therefore, the topic for future research would be very relevant.

Moreover, it is important to mention the role of family institution, social services and religion in prevention suicidal behavior among juveniles. The analysis of this research indicate that victims were lacking parental attention and had parental maltreatment. Furthermore, polygamy, divorce, sexual harassment and treachery, were mentioned as one of the major pushing factors for juvenile suicide or attempt to suicide. Besides, religious gap among the victims also has some effect on their suicidal behavior. This behavior is expressed through hopelessness and disbelief.

References

- Adedoyin, A. C. and Salter S. N. (2013). "Mainstreaming black churches into suicide prevention among adolescents: a literature review". *Ethnicity and inequalities in health and social care*, Vol. 6, No. 2/3, Pp. 43-53. doi:10.1108/eihsc-10-2013-0029
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, pp.191-215. doi:10.1037/0033-295x.84.2.191
- Bridge, J. A., Goldstein, T. R., and Brent, D. A., (2006). Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry* 47 (3/4), pp. 372–394. doi:10.1111/j.1469-7610.2006.01615.x
- Chukaeva, N.G., (2010). Social conditionality of setting the criminal liability for bringing to a suicide or an attempt to suicide. *Judicial science and lawenforcement practice*. 4 (14).
- Gould, M., Wallenstein, S., Kleinman, K., O'Carroll, P. and Mercy, J., (1990). Suicide Clusters: An Examination of Age-Specific Effects. *American Journal of Public Health*, 80, pp. 211-212. doi:10.2105/ajph.80.2.211
- Gould, M., Petrie, K., Kleinman, M. and Wallenstein, S., 1994. Clustering of Attempted Suicide: New Zealand National Data. *International Journal of Epidemiology*, 23 (6). pp.1-5. doi:10.1093/ije/23.6.1185
- Gould, M., (2001). Suicide and the media. In H. Hendin & J. J. Mann (Eds.), *Suicide prevention: Clinical and scientific aspects* (Annals of the New York Academy of Sciences, pp. 200-224). New York: New York Academy of Sciences. doi:10.1111/j.1749-6632.2001.tb05807.x
- Gould, M., Jamieson, P. and Romer, D., (2003). Media Contagion and Suicide Among the Young. *American Behavioral Scientist*, 46 (9), pp. 1269-1284. doi:10.1177/0002764202250670
- Grossman C. David, B. Carol Miligan, and Richard A. Deyo (1991). "Risk Factors for Suicide Attempts Among Navajo Adolescents." *American Journal of Public Health*, Vol.81, No.7, pp. 870-874. doi:10.2105/ajph.81.7.870
- Hamermesh, D. S. and Soss, N. M. (1974). An economic theory of suicide. *The journal of political economy*, 82 (1), pp. 83-98. doi:10.1086/260171
- Johansson, L., Lindqvist, P. and Eriksson, A., (2006). Teenage suicide cluster formation and contagion: implications for primary care. *BMC Family Practice*, 7 (32), pp. 1-5. doi:10.1186/1471-2296-7-32
- Lazarus, P. J., & Kalafat, J. (2001). Suicide prevention and youth: recommendations for public policy. *International Journal of Sociology and Social Policy*, 21(3), 22–37. doi:10.1108/01443330110789330
- Mercy, J., Kresnow, M., O'Carroll, P., Lee, R., Powell, K., Potter, L., Swann, A., Frankowski, R. and Bayer, T., (2001). Is Suicide Contagious? A Study of the Relation between Exposure to the Suicidal Behavior of Others and Nearly Lethal Suicide Attempts. *American Journal of Epidemiology*, 154 (2), pp. 120-127. doi:10.1093/aje/154.2.120
- Molina, José-Alberto and Rosa Duarte, (2006). "Risk Determinants of Suicide Attempts among Adolescents." *American Journal of Economics and Sociology*, Vol. 65, No. 2, pp. 407-434. doi:10.1111/j.1536-7150.2006.00456.x
- Nock, M. K., Hwang, I., Sampson, N. A., & Kessler, R. C. (2010). Mental disorders, comorbidity and suicidal behavior: results from the National Comorbidity Survey Replication. *Molecular psychiatry*, 15(8), 868-876. doi:10.1038/mp.2009.29
- Police report (2014, June 15). The MIA of Kyrgyzstan indicated 391193 facts of traffic violations. Retrieved from <https://mvd.gov.kg/index.php/rus/mass-media/all-news/item/8731-za-12-mesyatsev-2018-goda-sotrudnikami-guobdd-mvd-kyrgyzskoj-respubliki-vyyavleno-391193-faktov-narushenij-pravil-dorozhnogo-dvizheniya>

-
- Rozanov, V.A., (2013). "Genes and Suicidal Behavior". *Suicidology*, No.1, pp. 3-14.
- Wilkie, C., Macdonald, S. and Hildahl, K., (1998). "Community Case Study: Suicide Cluster in a Small Manitoba Community". *Canadian Journal of Psychiatry*, 98 (43), pp. 823–828. doi:10.1177/070674379804300807
- Zoroglu, S. S., Tuzun, U., Sar, V., Tutkun, H., Savaş, H. A., Ozturk, M. and Kora, M. E. (2003). Suicide attempt and self-mutilation among Turkish high school students in relation with abuse, neglect and dissociation. *Psychiatry and Clinical Neurosciences*, 57(1), 119-126. doi:10.1046/j.1440-1819.2003.01088.x
- Zotov, P. B. (2011). Umansky SM Klinicheskie formy i dinamika suitsidal'nogo povedeniya [Clinical forms and dynamics of suicidal behavior]. *Suitsidologiya-Suicidology*, 1, 3-7.

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SPATIAL ANALYSIS OF RESIDENTS' RESPONSE TO FEAR OF CRIME IN OSOGBO, OSUN STATE, NIGERIA

The fear of crime has received an unprecedented amount of attention in researches, however, there is a great deal which remains unknown regarding residents' response to fear of crime. The study investigated spatial pattern of residents' response to the fear of crime in Osogbo Local Government Area, Osun State, Nigeria. Primary data was collected by stratifying the Osogbo into three residential neighborhoods, namely; core, transition, and suburban areas. Systematic sampling was used in selecting 112 respondents across residential neighborhoods. The result revealed that most residents in the core perceived high risk of victimization during weekends while most of the residents in the suburban perceived heightened risk of victimization in the suburban during weekdays. The level of Crime Occurrence Index (LCOI) in the core area was 5.03 while 5.90 and 5.31 were indices for transition and suburban areas. The study recorded that religion, police patrol, lightning, membership/ support of vigilante and use of joint community responses were the commonly used strategy in responding to fear of crime while insurance scheme, burglary alarm system, closed-circuit television (CCTV), and surveillance camera were the least strategies used in responding to fear of crime in the study area. The study concludes that there is a significant difference in the responses of residents to fear of crime in the various residential neighborhoods.

Key words: victimization, fear of crime, residents' response, residential densities, Osogbo.

Introduction

Crime is an anti-social act that is carried out or omitted in violation of law of the land that can be prosecuted (Onoge, 1993; UN Habitat, 2007). According to Adler, Mueller, and Laufer (2001) and Schmaller (2004), any human conduct that breaches criminal regulations of a State, the Federal, or a local government, for which there is no lawfully satisfactory excuse or justification but subject to punishment is referred to as criminal act. Issues of crime to man was dated back to the creation of man and has become an inevitable feature of civilization which occur every day in form of thefts, assaults, homicide among others, in almost all parts of the world (Fajemirokun et al, 2006; Wayne, 2008; Carpenter & Nevin, 2009). The causes of crime have been argued differently. For instance, Bello (2011) inserted that city with spontaneous urbanization that are associated with uncontrolled growth patterns have more crime prevalence. Anselin et al. (2000) posit that place may be a crime factor, whether by affecting or determining the level and type of criminal behaviour by the persons who regularly visit an area or by luring persons who previously have the same criminal inclination. Other causes were severe economic variation and deprivation, societal disorganization, insufficient government service and incompetence

of the law enforcement, joblessness, social and political conditions among others influence reasons why people break the law (Murray et al, 2001).

The concept of fear according to Sulemana (2015) is the feeling of panic or terror that are originated by consciousness or expectation of danger or criminal victimization different from sadness, anger, despair, induced by the perceived signal in the environment relating to some feature of crime. In another dimension, fear of crime as suggested by Covington and Taylor (1991) is an emotional reaction of terror to potential violent crime and physical harm. It was viewed in a broader view by the Department of Equality, Justice and Law Reform (2009) as a subjective observable fact which integrates not just a person's emotional unease about symbols of crime, as well as the cost of criminalities, yet it involves their of risk discernment and the responsibility of the location in bringing out fear.

Fear of crime has been observed in different studies as a social problem for more than 40 years (Clemente & Kleiman, 1977; Lewis & Salem, 1986; Donnelly, 1989). While early studies have concentrated on the conceptualization of crime, other researches have centered on the ways of operationalizing fear of crime (Rader, 2017; Jackson, 2006; Johnson, 2015; Cohen, 2008; Soares, 2006; Jackson et al., 2009; Quang & Hang, 2002; Tseloni & Zara-

foniton, 2008; Nasi et al., 2020; Ceccato & Nalla, 2020). The submission of these studies is that there is little or no relationship between crime rate and fears of crime. However, their relationship varies with time and space. Some researchers in the USA discovered that there is no correlation between crime rate and fear of crime (Johnson, 2015). Snyder and Mulako-Wangota (2015) supported this assertion that when crime rates decline, fear of crime often fails to drop. Rader (2017) also corroborated that perceptions of crime have increased while the crime rate decreases most times. Studies in developing countries have shown a relationship between the two (Quang & Hang, 2002; Tseloni & Zarafoniton, 2008; Badiora et al., 2014). An increase in crime waves often increases the fear of crime among people in the cities of developing countries especially Nigeria. The statistics of reported crime for instance in Nigeria show an increase from 120,911 cases to 144,505 between 1995 and 2000 (Agbola, 2004). It was later projected that, by 2030, the number of cases reported would have doubled.

Increase in the crime rate does not only have an adverse effect on society but also on the inhabitant, thereby contributing to fear (Badiora et al., 2012). Vanderveen (2006) noted that fear of crime is one of the powerful forces that is used in decreasing community bonds. To respond to fear of crime, different safety behaviours have been identified in literature. These include the use of private security or corporate guards (Agbola, 1997; Fabiyi, 2004); construction of high fencing walls around residences; strong locks and massive gates; illumination conveniences installation at every angle of the residence surroundings; mounting of dogs, insurance schemes, gun, installation of closed-circuit television (CCTV), unique security entrance, burglar rings, police tour of duty, windowpane and door grill, night watchmen employed to keep watch on neighborhoods (Agbola, 2002; Afon & Badiora, 2013; Abodunrin 2004). Other responses include avoidance, protective, insurance, communicative, and information-seeking behavioural responses (Garofalo, 1981).

Adigun and Adedibu (2013) posited that the crime experienced and its attendant fear is comparatively simplified when urban centres are grouped into residential zones. This is because, according to Afon (2005), residential zones in urban centres have a tendency to show more lasting geographical attributes in terms of structures, locations, housing types among others. Also, these lasting geographical elements impartially embody the socio-economic and traditional characteristics of inhabitants which may determine variations in fear of crime. This study thus evaluates responses to fear of crime among residents

in the core, transition, and suburbs of Osogbo. The aim of this study is to examine whether the response of residents to fear of crime or feelings of insecurity in various residential neighborhoods has a spatial in Osogbo LGA, Osun State, Nigeria. The study specifically examines the types of crime and level of crime in different residential densities as well as residents' response to the fear of crime in the study area.

Literature Review

Issues on fear of crime have been amplified in literature. However, those that are related to this study were reviewed under this section. These issues include crime occurrence (Agbola, (1997; Afon, 2001; Charron, 2012; Adigun, 2012; Morrison & Rockmore, 2021; Chataway & Mellberg, 2021), likelihood of victimization (Wynne, 2008), measurements of frequency and intensity of fear (Farral, Gray, Jackson, 2008), predictors and consequences (Garofalo, 1981; Truman, 2005), gender and fear of crime (Hilinski, Neeson, and Andrews, 2011), socio-economic status and fear of crime (Bedenbaugh, 2003; Truman, 2005) and perceptions of safety (Shepherdson, 2014). While most of these studies of fear of crime were carried out in the residential environment, studies on respondents' coping mechanism to fear of crime are hard to come by.

Yazdanfar and Nazari (2015) examined the influence of physical environmental design factors on crime prevention in the Chizar neighborhood, Tehran. The study concluded that for the subjective part of security to get better, objective features of security must get better in terms of landscaping (preventing pollution), social factors (sense of ownership), and physical factors (size and form, appropriate building density). Similarly, Naghibi et al (2015) focused on the achievement to physical characteristics of security in residential neighborhoods of Deh-Vanak. The study observed that a significant correlation existed between attributes like public services, lighting, vegetation (landscape), safety, and presence of folks. The work of Adigun and Adedibu (2013) evaluated the correlations of the response of residents to crime in cities of Nigerian. The study posited that environmental building features were the strongest dependent variable that informs residents' response to crime among other socio-economic attributes and residential crime degree. Though on one hand, studies reviewed have discussed environmental attributes in relation to response to the fear of crime; empirical researches on small cities are very few compared to bigger cities which present diversified criminal activity pattern. This study assessed other responses such as avoidance response, physical and

social protective response, communicative, and participatory responses to fear of crime spatially in the core, transition as well as suburban areas of Osogbo.

Some researchers have considered residents' response to crime. For instance, Agbola, (1997) focused on target hardenings, such as fencing, good locks, or secured alarms as a form of method residents adopted to control crime. Fabiyi's (2004) research posited that community building in form of setting up security displays in the urban area by Neighbourhood Association (NA) is a response to insecurity which has brought a new dimension to livability and strengthening social cohesion in Ibadan. Obasola (2013) posited that religion is a veritable response tool in solving most crimes exhibited by the youth in Nigeria. Similarly, Badiora (2012) examined the spatio-temporal pattern of crime and delinquency in Ile-Ife and concluded that three important individual reactions to the fear of crime as well as delinquency in core centre, middle, high income, and post-crisis areas were the use of security light, use of burglary proofing and fencing while the use of vigilante group, human security guide, and security street light were three important neighborhood responses in the study area.

From the foregoing, it is evident that there is a dearth of literature on spatial analysis of residents' response to fear of crime, especially in Nigeria. Therefore the present research attempts to provide an answer to these questions: What are the perceived types of crime and level of occurrence in the study area? What crimes do people fear most and the reasons why? How do residents respond in several ways to fear of crime in different residential areas?

The Methods

Study Area

Osogbo, a pre-colonial Yoruba tribal town in the southwest part of Nigeria and the capital city of Osun State and, lies amid Longitude 40 34' 0" as well as Latitude 70 46' 0" North" East. It shares a boundary with Iragbiji, Ikirun, Ilesa, Egbedore, and Ede. It can be accessed without difficulty from any side of the state because of its central location. The city became a commercial hub ever since 1907 at what time the Nigerian railway was founded and the rail line transverse the township. It rose to become the administrative city of a newly created state due to the 1991 political-administrative reform in Nigeria. Osogbo thus transformed from the low lying position of the old province to a bustling city of regional and national importance.

Osogbo has since experienced remarkable growth both in population and areal extent. The key

singular reason for the expansion of the town is almost certainly the establishment of a rail line station. Apart from this, the extension of postal and telecoms branch offices, NEPA regional office, construction of road system, and a few small and large-scale commerce subsist. Hence, Osogbo is converted into a chief centre for trade plus retail for people in and out of its very close environment. This new class predictably introduced a number of new dynamics into the urbanization problems, patterns, and development of the emerging city. It has been growing since, demographically and spatially.

The population of Osogbo Local Government Area (LGA) was projected from 157, 207 in 2006 to 187, 693 in 2012 with a total land area of 2,875sq.km (Akanji, 1994) (see Figure 1.1). Recently, the setting of Osogbo as the capital of the state together amongst other reason have culminated in the incursion of folks from other villages plus towns, as a result becoming, a twin city - a traditional plus a contemporary city. (Adenaike, 1991; Egunjobi, 1995); a major reason, the location has attracted crimes. It includes the following: forcible rape, murder, aggravated assault, robbery, kidnapping, burglary, arson, and motor vehicle theft, which is a major problem facing Nigeria today. The threat from a bunch of criminals is rising and their dangerous exploit lately has made countless homes abode of crying and wailing (Ajibade, 2011). Consequently, though the city is developing fast, its safety condition yet hampers progress to a substantial degree. This trend undoubtedly adds up to danger signs to development nationally.

Data Collection and Analysis

Data were collected from primary and secondary sources for this study. Primary data was obtained by stratifying the study area into three residential areas, namely; core, transition, and suburban areas. A sum of 246 existing streets, comprising 44, 54, and 27 streets in the core, transition, and suburban respectively, were identified. In each residential area, one out of every 10 streets (10%) was intentionally selected. A total of 1102 residential buildings, comprising 522, 309, and 271 buildings were identified from the three residential neighborhoods. Tenth of every building (10%) where a household head was selected per building using the systematic technique. Using this method, a total of 112 were administered for data analysis. Descriptive and mean statistics were used to analyze the data gathered.

The questionnaire was used to collect information on residents' responses to crime with response to perceived types of crime and their level of occurrence, and ways in which resident responds to fear of crime in

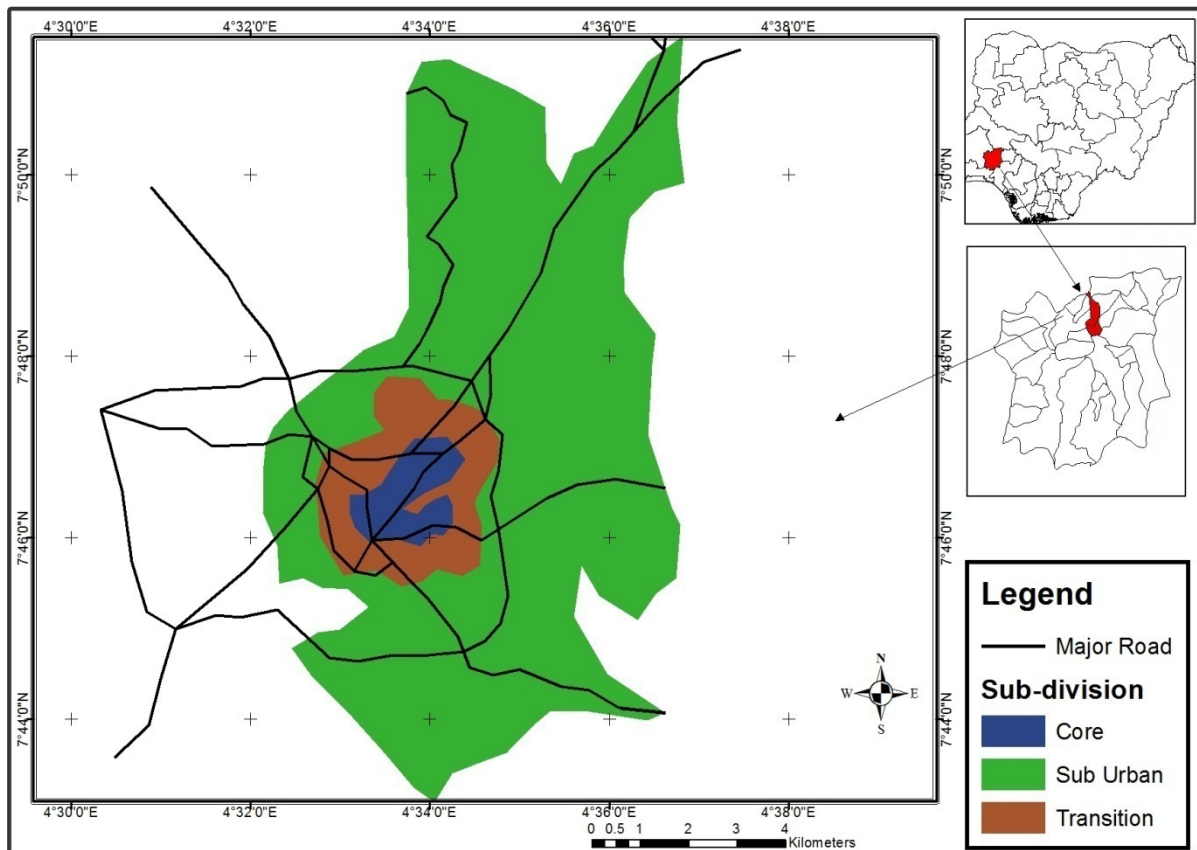


Figure 1 – Osogbo Local Government Area in the Context of Osun State
Source: Adopted from Fatusin et al. (2019)

different residential areas in the study area. The questionnaire was self-administered. Before its application, a psychologist was consulted to check the applicability of the developed scale. A pilot study was conducted and some items of the scale were revised. Questions were asked to know about the perceived types of crime as well as their level of occurrence across the residential densities. Respondents were asked to express their views on the following questions; What is the common time of occurrence of most crimes in the study area; What is the common types of crime; What is the level of occurrence of each of the identified crime types and what are your responses to fear of crime in the study area. The question set included questions about respondents' perceptions, which were rated on a seven-point Likert scale.

Analytical Method

In other to measure the level of crime occurrence index in the core, transition, and suburban area of Osogbo LGA. Types of crimes for the study were grouped according to the list of crimes identified in the literature. These were grouped as crime

against persons, and crime against properties. Crime against a person includes murder, manslaughter, attempted murder, suicide, and attempted suicide. Others include rape and indecent assault, slave dealing, kidnapping, child stealing, abuse, grievous harm, and wounding. Listed under crime against properties are robbery, burglary, stealing, housebreaking, store breaking, arson, property theft, vehicle hijacking, false pretense cheating, and receiving stolen properties. Based on these types of crime, the level of occurrence of each of the identified crime types from the perception of the residents was examined. Residents were to express their views on a seven-point Likert scale such as «Very Much Frequent» (VMF), «Very Frequent» (VF), «Frequent» (F), «just frequent» (JF), «Infrequent» (I), «Very Infrequent» (VI), and «Very Much Infrequent» (VMI).

The analyses of the rating that were gotten from the Likert scales adopted through respondents' indication were developed into an index called «Level of Crime Occurrence Index» (LCOI). To determine the weight value, 1,2,3,4,5,6 and 7 were attached to «Very Much Frequent» (VMF), «Very frequent» (VF), «Frequent» (F), «just frequent» (JF), «Infrequent» (I),

«Very Infrequent» (VI), and «Very Much Infrequent» (VMI) respectively. The Weight Value Summation for each type was obtained by adding the product of the number of responses to each type and the corresponding weight value attached to each rating.

This is mathematically expressed as

$$WVS = \sum_{i=1}^7 x_i y_i \quad (1)$$

Where:

WVS= Weight value Summation;

x_i = number of respondents to rating i ;

y_i =the weight assigned to a value ($i=1, 2, 3, 4, 5, 6, 7$).

The index for each of the crime type that was identified takes a value of between 7 and 1. The closer the value to 7, the greater the incidence that residents attached to that type of crime under consideration. Each level of crime occurrence index (LCOI) for each type of crime was arrived at by dividing the Weight value Summation (WVS) by the number of identified crime types ($n=28$) and deducting it from the division of Weight value Summation (WVS) by the number of rating ($x_i=7$), Thus;

Level of Crime Occurrence

$$\text{Index (LCOI)} = \frac{WVS}{\sum_{i=1}^7 i} = Xi \quad (2)$$

The mean index was computed for the study area «Osogbo» and each of the residential neighborhoods. This was obtained through the addition of the indices of LCOI of the Local Government and dividing them by the number of the identified types of crime ($n=28$). The mean index of core, transition, and suburban residential neighborhoods of Osogbo Local Government was denoted by average LCOI.

Result and Discussion

Under the different headings below, the results of this study were discoursed. The Tables through

which information is summarized are the results of the survey conducted by the author(s) (Farodoye, Oladehinde, Atoyebi, and Lukman) in 2018 unless otherwise specified.

Time of crime occurrence in the day and week across the residential areas

Time of crime occurrence in the day and week is related to types and levels of crime occurrence (Jayamala, 2008; Badiora et al., 2013). The view of residents on the time of crime occurrence of most of the identified common crime is presented in Table 1. As presented in Table 1, it was observed that more than half (52.9%) of the respondents in the core perceived that most of the criminal activities, next to this was 45.2% in transition and 29.7% in suburban while 50% of the respondents in suburban perceived criminal activities during the day time, next to this was 21.6% in core and 19.4% in transition areas. About 35.5% of the residents in transition observed that criminal activities occur both weekdays and weekends. It could be inferred that most residents in the core perceived high risk of victimization during weekends while most of the residents in the suburban perceived heightened risk of victimization in the suburban during weekdays. Further analysis showed that 59.1% of the respondents perceived criminal activities during the night time, 20.9% perceived it in both day and night time while 19.6% perceived it during the daytime. It could be established that criminal activities are more prevalent in the night time than day time across the residential densities. There was significant variation in the time of occurrence of criminal activities in various residential neighborhoods in the study area. The Chi-square value of $\chi^2 = 10.594$ and 93.454 is significant at $p = 0.032$ and $p = 0.031$ in the time of the week and day respectively. This showed that different types of crime occur during the week and day differently in the study area.

Table 1 – Time of Crime Occurrence in Different Residential Areas of Osogbo LGA

Time of the week	Core	Transition	Suburban	Total for Osogbo
Weekdays	11 (21.6%)	6(19.4%)	15(50.0%)	31(28.6%)
Weekend	27(52.9%)	14(45.2%)	8(29.7%)	49(43.8%)
Both	13(25.5%)	11(35.5%)	7(23.3%)	30(27.7%)
Total	52(100.0)	31(100.0)	30(100.0)	112(100.0)
Time of the day	Core	Transition	Suburban	Total for Osogbo
Daytime	13(25.5%)	5(16.1%)	4(13.3%)	22(19.6%)
Night time	33(64.7%)	14(45.2%)	19(63.3%)	65(59.1%)
Both	5(9.8%)	12(38.7%)	7(23.3%)	23(20.9%)
Total	52(100.0%)	31(100.0)	30(100.0)	112 (100.0)

Level of Crime occurrences in the three residential areas in Osogbo from Residents' view

The level of crime occurrence in the core residential neighborhood is shown in Table 2. The crime could be grouped into three deviations from the mean, relative to residents' perceived level of crime occurrence. These groups include positive deviation, zero deviation, and negative deviation from the mean index (LCOI). It was clear from Table 2 that those crime types perceived to have a higher irregular level of occurrence in the core residential area of Osogbo Local Government included vehicle hijacking, attempted suicide, receiving stolen property, arson, vehicle theft, assassination, and sexual harassment. Others included burglary, murder, kidnapping, child stealing, suicide, vehicle theft, attempted rape, manslaughter, assault, attempted murder, and child abandonment. All these crime types had their infrequent level of occurrence index higher than average LCOI.

Thus, all these might not amount to major crime challenges in the core area of the city.

Moreover, the average frequent crime level of occurrence index (LCOI) for core residential area was 5.03. Thus, crimes below this level are the crimes that had responses index higher than LCOI. Thus, all these accounted for major crime challenges in the city core area. The crime types such as robbery, housebreaking, rape, armed robbery, store breaking, internet scam, cultism, and related harm, pick-pocketing, drug offenses, stealing of small items, as well as child abuse had their frequent level of occurrence index below the average LCOI (see Table 2). As a result, all these make up the most important crime challenge. Relative to residents' perceived level of occurrence, the five crime types that frequently occurred in the traditional core area of the local government included child abuse, stealing of small items, drug offenses, pick-pocketing, and cultism. The LCOI of each of these crimes was 3.06, 3.40, 3.56, 3.92, and 4.08 respectively.

Table 2 – Level of Crime Occurrence in Core Residential Area of Osogbo

Crime Perceived Related Activities	Crime Level and Weighted Values									
	VMI (7)	VI (6)	I (5)	JF (4)	F (3)	VF (2)	VMF (1)	WVS	LCOI	DM
Vehicle hijacking	203	78	65	4	0	0	0	350	6.86	1.83
Attempted suicide	203	42	80	0	0	0	0	325	6.25	1.22
Receiving stolen property	161	84	70	0	0	0	0	315	6.06	1.03
Arson	161	72	60	8	3	4	1	309	5.94	0.91
Assassination	168	72	60	4	0	0	0	304	5.85	0.82
Sexual harassment	154	78	65	0	3	0	0	300	5.77	0.74
Burglary	112	72	60	12	12	22	1	291	5.60	0.57
Murder	175	48	40	20	0	0	1	284	5.46	0.43
Kidnapping	161	60	50	4	6	2	1	284	5.46	0.43
Child stealing	175	36	30	20	9	10	0	280	5.38	0.35
Suicide	154	66	55	0	3	2	0	280	5.38	0.35
Vehicle theft	140	72	60	0	3	2	0	277	5.33	0.30
Attempted rape	182	48	40	0	0	2	0	272	5.23	0.20
Manslaughter	175	42	35	16	3	0	0	271	5.21	0.18
Assault	98	78	65	4	9	12	0	266	5.12	0.09
Attempted murder	217	24	20	0	0	2	0	263	5.06	0.03
Child abandonment	161	54	45	0	0	2	0	262	5.04	0.01
Robbery	91	60	50	8	21	16	8	254	4.88	-0.15
Housebreaking	49	72	60	24	24	14	7	250	4.81	-0.22
Rape	161	42	35	8	0	2	0	248	4.77	-0.26
Armed robbery	119	42	35	12	12	16	5	241	4.63	-0.40
Store breaking	63	48	40	32	27	12	9	231	4.44	-0.59
Internet scam	91	42	35	4	6	34	8	220	4.23	-0.80

Continuation of table 2

Cultism	63	42	35	12	21	30	9	212	4.08	-0.95
Pick-pocketing	84	30	25	8	21	28	8	204	3.92	-1.11
Drug offenses	35	42	35	4	21	38	10	185	3.56	-1.47
Stealing of small items	91	12	10	4	18	32	10	177	3.40	-1.63
Child abuse	56	24	20	8	15	22	14	159	3.06	-1.97
Average LCOI									5.03	

Further analysis of the level of crime occurrence in transition residential area is presented in Table 3. The average LCOI for the transition was 5.90. Criminal activities that were rated above the mean LCOI were manslaughter, assault, sexual harassment, receiving stolen property, child abandonment, arson, murder, attempted rape, attempted murder, suicide, assassination, kidnapping, child stealing, and vehicle theft with indices of 8.32, 8.09, 7.45, 7.35, 7.32, 7.23, 7.13, 6.84, 6.81, 6.48, 6.26, 6.26, 6.19, 6.16, and 5.87 respectively. This shows that all these crimes might not pose serious challenges in the transition residential area of Osogbo Local Government. However, crimes frequently experienced in this area that were rated below the mean LCOI included burglary, pick-pocketing, robbery, rape, vehicle hijacking, armed robbery, store breaking, internet scam, cultism, housebreaking, child abuse, stealing of small items, and drug offenses. There associated indices 5.65, 5.55, 5.39,

5.32, 5.29, 5.23, 4.71, 4.45, 4.26, 4.26, 4.19, 3.68 and 3.42. These types of crimes were the most occurring crime in the area. As residents perceived it in their responses, the summary of the crime rate of occurrence index in the transition residential area of the town was presented in Table 3. With an index of 3.42, drug offense was perceived to be the major challenge in this part of the city. This may be attributed to the fact that this area is presumed to accommodate a large number of gangsters. Drug use and alcohol have been established to be a common practice among college (secondary school) dropouts (Mukoro, 1994; Okorodudu & Okorodudu, 2003; Portnov & Rattner, 2003; Alemika&Chukuma, 2005) and unemployed or jobless youth (Jayamala, 2008). Also, as observed from the table, only vehicle theft had a positive deviation which makes it a prominent crime influencing fear in the heart of Osogbo. Routine Activity of residents in this area may motivate this crime.

Table 3 – Level of Crime Occurrence in Transition Residential Area of Osogbo

Crime Perceived Related Activities	VMI (7)	VI (6)	I (5)	JF (4)	F (3)	VF (2)	VMF (1)	WVS	LCOI	DM
Manslaughter	98	84	70	0	6	0	0	258	8.32	2.42
Assault	70	96	80	4	0	0	0	250	8.06	2.16
Sexual harassment	105	66	55	4	0	0	1	231	7.45	1.55
Receiving stolen property	119	54	45	4	6	0	0	228	7.35	1.45
Child abandonment	112	60	50	4	0	0	1	227	7.32	1.42
Arson	133	48	40	0	3	0	0	224	7.23	1.33
Murder	147	36	30	4	3	0	1	221	7.13	1.23
Attempted rape	70	72	60	4	6	0	0	212	6.84	0.94
Attempted murder	147	30	25	8	0	0	1	211	6.81	0.91
Suicide	133	36	30	0	0	2	0	201	6.48	0.58
Attempted suicide	112	48	30	4	0	0	0	194	6.26	0.36
Assassination	91	48	40	4	6	4	1	194	6.26	0.36
Kidnapping	98	42	35	8	6	2	1	192	6.19	0.29
Child stealing	84	48	40	8	6	2	3	191	6.16	0.26
Vehicle theft	98	42	35	4	0	0	3	182	5.87	2.36

Continuation of table 3

Burglary	63	48	40	4	12	4	4	175	5.65	-0.03
Pick-pocketing	63	48	40	0	15	6	0	172	5.55	-0.25
Robbery	70	42	35	0	12	8	0	167	5.39	-0.51
Rape	84	30	25	4	15	6	1	165	5.32	-0.58
Vehicle hijacking	112	24	20	4	0	4	0	164	5.29	-0.61
Armed robbery	91	30	25	4	9	0	3	162	5.23	-0.67
Store breaking	28	48	40	0	21	4	5	146	4.71	-1.19
Internet scam	70	24	20	0	12	4	8	138	4.45	-1.45
Cultism	35	30	25	0	21	18	3	132	4.26	-1.64
Housebreaking	49	30	25	0	18	4	6	132	4.26	-1.64
Child abuse	28	30	25	8	24	10	5	130	4.19	-1.71
Stealing of small items	21	30	25	4	21	8	5	114	3.68	-2.22
Drug offences	14	30	25	0	9	18	10	106	3.42	-2.48
Average LCOI									5.90	

The result of the Level of crime occurrence in the suburban residential area was recorded in Table 4. The average level of crime occurrence (average LCOI) index in the suburban area of Osogbo local government is 5.31 (see Table 4). It was observed that some crimes were rated above the mean LCOI. The occurrences of these types of crime were not really frequent in the suburban area from the residents' point of view. These crimes included suicide, attempted rape, manslaughter, rape, attempted suicide, attempted murder, vehicle hijacking, and murder. Others were armed robbery, child stealing, vehicle theft, assassination, kidnapping, robbery, and arson. This is an indication that these types of crimes rarely happen, and there was not much concern in this area. On the other hand, crime types such as child abuse, receiving stolen items, pickpocketing, sexual harassment, child abandonment, assault, drug offenses, bur-

glary, cultism, store breaking, stealing of small items, housebreaking, and internet scam were frequently experienced, as their indices were rated below the mean LCOI.

Residents' responses revealed internet scam is the most frequent crime with an index of 3.93. It could therefore be inferred that crime relating to internet access is common due to its location in the urban area that has an advantage of more technology infrastructural presence like telecommunication facilities, cybercafés, among modern computer gadgets and residents who can afford them, when compared to other residential areas. This is in line with the view of Sesan, Soremi, and Bankole (2012) who noted that penetration of internet in Nigeria took a running jump at the turn of the 21st century, with less than 5% in 2002 and over 30% by the end of 2012, and the growth is only poised to accelerate.

Table 4 – Level of Crime Occurrence in Suburban Residential Area of Osogbo

Crime Perceived Related Activities										
	VMI (7)	VI (6)	I (5)	JF (4)	F (3)	VF (2)	VMF (1)	WVS	LCOI	DM
Suicide	15	42	35	0	0	0	0	182	6.74	1.43
Attempted Rape	70	54	45	4	3	0	0	176	6.52	1.21
Manslaughter	84	48	40	0	0	0	1	173	6.41	1.10
Rape	70	54	45	4	0	0	0	173	6.41	1.10
Attempted Suicide	98	36	35	0	0	0	0	169	6.26	0.95
Attempted Murder	12	30	25	0	0	0	1	168	6.22	0.91
Vehicle Hijacking	98	36	30	0	3	0	0	167	6.19	0.88

Continuation of table 4

Murder	112	24	20	0	0	2	1	159	5.89	0.58
Armed Robbery	49	42	35	16	6	4	0	152	5.63	0.32
Child Stealing	98	24	20	4	3	0	0	149	5.52	0.21
Vehicle Theft	70	36	30	8	3	0	0	147	5.44	0.13
Assassination	84	30	25	8	0	0	0	147	5.44	0.13
Kidnapping	77	30	25	12	3	0	0	147	5.44	0.13
Robbery	77	24	20	0	21	2	0	144	5.33	0.02
Arson	70	36	30	4	3	0	1	144	5.33	0.02
Child Abuse	70	24	20	4	18	4	0	140	5.19	-0.12
Receiving Stolen Property	84	30	25	0	0	0	0	139	5.15	-0.16
Pick Pocketing	63	24	20	12	6	12	0	137	5.07	-0.24
Sexual Harassment	70	24	20	12	6	2	2	136	5.04	-0.27
Child Abandonment	84	24	20	4	0	0	0	132	4.89	-0.42
Assault	63	24	20	4	6	10	1	128	4.74	-0.57
Drug Offences	56	24	20	4	3	12	4	123	4.56	-0.75
Burglary	49	18	15	8	21	8	2	121	4.48	-0.83
Cultism And Related Harm	56	24	20	0	6	12	2	120	4.44	-0.87
Store Breaking	63	6	5	12	12	16	1	115	4.26	-1.05
Stealing Of Small Items	49	18	15	4	9	16	3	114	4.22	-1.09
House Breaking	42	12	10	4	24	16	2	110	4.07	-1.24
Internet Scam/ Cybercrime	49	18	15	4	9	6	5	106	3.93	-1.38
Average LCOI									5.31	

General observation of the level of crime occurrence across the residential area of Osogbo is that criminal activities in the transition area are more *frequent* as the average LCOI was 5.90 which is closer to 6 while the level of crime occurrence in core and suburban was *not really frequent* as their average indices were 5.03 and 5.31. This shows that variation exists in the types of crime and level of crime occurrence in the three residential zones of the study area. The study supports the finding of Afon (2001) that criminal activities are more prevalent in certain densities with different degrees of incidence. This finding also corroborates the study of Abodunrin (2004), Adigun (2012), Badiora et al (2013), and Badiora et al (2014). The reason for this variation may be attributed to differences in socio-economic characteristics of the residents and the environmental characteristics of the residential area in the study area

Residents' Responses to Fear of Crime in Osogbo

Residents' responses to fear of crime through different means vary from individual to neighborhood responses. However, findings with respect to indi-

vidual houses' responses were examined (see Table 5). The Table shows that religion (faith) was the most widely used individual housing response strategy (12.8%). This was accounted for 14% in the core, 14.6% in transition, and 10.1% in the suburban. This could be the reason why many households attached more importance to religion. Religion plays a central role in shaping the attitudes and perceptions of residents in reducing fear of crime. Next to religion was police patrol which is accounted for 11.5%. The proportions across the densities were 11.7%, 13%, and 10.1% in the core, transition, and suburban areas respectively. This response was employed among the respondents mostly in transition, followed by core and suburban. Another major response strategy was lighting (11.1%). The use of lighting is commonly used in transition (12%), followed by the core (11.4%) and suburban (10.1%). Lighting is common among households to illuminate their surroundings and exposed intruders approaching their dwelling at the night. Some of the lighting systems observed in the course of the survey range from electric bulbs, fluorescent tubes, floodlights, and searchlights.

Next to lighting were membership/support of vigilante (10.7%) and use of Joint Community re-

sponses (10.6%). These strategies were closely related to respondents' ratings in all residential areas of the town. The suburban accounted for 9.7% and 8.2%, the transition accounted for 8.3% and 8.3%, while the core area of the town accounted for 12.8% and 12.2%. The use of vigilante and the use of joint community responses are common among respondents in the core area more than transition and suburban. The reasons for this may probably be due to differences in environmental characteristics of the residential densities.

Another way of response strategy after the use of joint community response was burglary proofing (10%) in the study area. Burglary proofing was a major feature in the transition (12%) and suburban (10.4%) residential zones. The other ways of responding to fear of crime were human guard/ security guide (6.6%), African traditional methods (6.1%), fencing (3.2%), avoiding certain areas in the day and

nights (3.2%), use of cutlass/axe/stick (3.1%), use of gun/firearms (2.4%), security dog (2.1%), special window/door grilles (2.0%), special security door/window locks (1.6%), security alarm (0.9%), insurance scheme (0.7%), burglary alarm system (0.6%), closed-circuit television (CCTV) (0.4%) and surveillance camera (0.4%). It could be inferred that religion, police patrol, lightning, membership/ support of vigilante and use of joint community responses were the commonly used strategy in responding to fear of crime while insurance scheme, burglary alarm system, closed-circuit television (CCTV), and surveillance camera were the least strategies used in responding to fear of crime in the study area. It is important to note that the adoption of these strategies in responding to fear of crime varies across the residential densities. The result of the Chi-square test was further used to validate the values of different safety strategies that were adopted by the respondents (see Table 5).

Table 5 – Residents' Housing Security Responses to Fear of Crime

Safety Strategy Individual Housing	Residential Densities			Total
	Core	Transition	Sub-Urban	
Insurance Scheme	1(0.3%)	1 (0.5%)	4(1.5%)	6(0.7%)
Burglary Proof	34(9.9%)	23(12.0%)	28(10.4%)	85(10.0%)
Fencing	5(1.5%)	3(1.6%)	18(6.7%)	26(3.2%)
Security Alarm	0(0.0%)	1(0.5%)	6(2.2%)	7(0.9%)
Human Guard/Security Guide	20(5.8%)	13(6.8%)	20(7.5%)	53(6.6%)
Gun/Fire Arms	8(2.3%)	5(2.6%)	6(2.2%)	19(2.4%)
Security Dog	1(0.3%)	5(2.6%)	11(4.1%)	17(2.1%)
Cutlass/Axe/Stick	17(5.0%)	2(1.0%)	6(2.2%)	25(3.1%)
Member of community vigilante association	44(12.8%)	16(8.3%)	26(9.7%)	86(10.7%)
Joint community response e.g. whistle blowing etc.	42(12.2%)	16(8.3%)	22(8.2%)	80(10.6%)
Police/Military Personnel	40(11.7%)	25(13.0%)	27(10.1%)	92(11.5%)
Closed Circuit Television (CCTV)	0(0.0%)	1(0.5%)	2(0.7%)	3(0.4%)
Special security door/window locks	3(0.9%)	5(2.6%)	5(1.9%)	13(1.6%)
Surveillance Camera	0(0.0%)	3(1.6%)	0(0.0%)	3(0.4%)
Lighting	39(11.4%)	23(12.0%)	27(10.1%)	89(11.1%)
Religion (Faith)	48(14.0%)	28(14.6%)	27(10.1%)	103(12.8%)
African Traditional Methods (Charms)	28(8.2%)	10(5.2%)	11(4.1%)	49(6.1%)
Burglar Alarm System	1(0.3%)	0(0.0%)	4(1.5%)	5(0.6%)
Special window/door grilles	4(1.2%)	5(2.6%)	7(2.6%)	16(2.0%)
Avoiding to take certain paths in the day and nights	8(2.3%)	7(3.6%)	11(4.1%)	26(3.2%)
Total	*343(42.7%)	*192(23.9%)	*268(33.4%)	*803(100.0)

**Higher than the total survey because of multiple responses*

The result in Table 6 shows that there was significant variation in the response of respondents to fear of crime in the study area. This was confirmed by the chi-square

value ($\chi^2 = 167.703$) at significant level of $p = 0.000$. This implies that respondents' strategies in responding to fear of crime vary across the residential zones.

Table 6 – Chi-square test of significant variation in residents' responses to fear of crime

Safety strategy of individual housing	Pearson chi-square	Degree of freedom (df)	Assumption significant
Residents' Responses to Fear of Crime	167.703	40	0.000

Conclusion and Recommendation

Different types and levels of occurrence of crime are commonly attributed to human communities that affect the security of towns and cities in developing countries. This study of spatial analysis of residents' response to the fear of crime across different residential zones which specifically examines the types and level of crime, as well as residents' response to the fear of crime in Osogbo, revealed varying degree in the types of crime and level of crime occurrence in the different residential area of the study area. The study reported that the level of crime occurrence across the residential area in the transition area is more *frequent* as the average LCOI was 5.90 which is closer to 6 while the level of crime occurrence in core and suburban was *not really frequent* as their average indices were 5.03 and 5.31. It was also reported that religion, police patrol, lightning, membership/ support of vigilante and use of joint community responses were the commonly used strategy in responding to fear of crime while insurance scheme, burglary alarm system, closed-circuit television (CCTV), and surveillance camera were the least strategies used in responding to fear of crime in the study area. The findings of this study have implications for policy formulation in ensuring a safer city or adequate urban security. Based on the above findings, it is suggested that different strategies should be

put in place to address crime and effective ways of responding to fear of crime.

Residents should be more conscious of security by installing strong and unique security entry locks in each dwelling. Ferraro (1995) established that folks who have resided on their land for a more lengthened period are least probable to be fearful and more probable to set up supplementary security gadgets. Also, security experts say about 34% of all store breaking or housebreaking come in right through the door (NPF 2010). Thus, any investment residents make securing their doors will probably pay off. Additionally, residents have to conceal valuables. They must make sure that valuables are secreted from those passing by. This is achievable using curtains that ensure privacy (they allow light nevertheless obstruct the view) so passers-by with a criminal mindset would not see in while occupants are not home. Another major modern approach this study suggests to reducing crime is to create a central system of response to crime that every household can log into or call when in distress.

The investigative method should be used in demarcating areas of intense criminal activity. Policy-makers and police divisions should be involved in build tactics and organize their forces in a way that must offer formidable securities. Nevertheless, the lasting answer to the problem of crime should stress a safe city through policies aimed at continuous attempts at reducing poverty.

References

- Abodunrin, F.O. (2004): Spatio-Temporal Variation and Residents Response to Crime in Ogbomoso. M.Tech, Dissertation Department of Urban and Regional Planning, Ladok Akintola University of Technology.
- Adenaike, F.A., (1991): The Pioneers. Osun State of Nigeria.
- Adigun, F. O, and Adedibu A. A. (2013): Correlates of Residents Response to Crime in Nigerian Cities. Global Journal of Human-Social Science Research. Retrieved from <https://socialscienceresearch.org/index.php/GJHSS/article/view/760>
- Adigun, F. O. (2012): Spatio-temporal Analysis of Urban Crime in Selected Nigerian Cities. Ph.D dissertation, Department of Urban and Regional Planning, Ladok Akintola University of Technology, Ogbomoso.
- Adler, F., Mueller G.&Laufer, W. (2001):Criminology, 4th (ed): NewYork:McGraw Hill.
- Afon A. O &Badiora A. I (2013): Spatial Distribution of Delinquent Behaviour in a Yoruba Traditional City: The experience from Ile-Ife, Nigeria. Research in Humanities and Social Sciences, 3(1), 229-238,
- Afon, A. O (2005): Solid waste management in selected cities of Oyo state, Nigeria. Ph.D. Dissertation, Department of Urban and Regional Planning, ObafemiAwolowo University, Ile-Ife, Nigeria.
- Afon, A.O (2001). Resident Diversity Factor in the Perception of and Response to Fear of Crime in Nigeria. Paper presented at the International Conference on Security, Segregation and Social Networks in West Africa Cities 19'th – 20th centuries, held at the International Centre for African Studies (IFRA) University of Ibadan.
- Agbola, T (2004). Urban violence in Nigeria Cities, a case study of Abuja In: Journal of the Nigeria Institute of Town Planners. 57(1), 59-77.

- Agbola, T. (1997): Architecture of Fear: Urban Design and Construction Response to Violence in Lagos, Nigeria, IFRA, Ibadan, Nigeria.
- Ajibade D. (2011). Crime Prevention and Control in Nigeria: A Study of Ogun StatePoliceCommand. *African Journal of Law and Criminology*, 1(1),131 -139.
- Akanji, O.O (1994). Towards A Viable Rural Financial Market in Nigeria. *Bullion*, Central Bank of Nigeria, 18(4), 22-38
- Akinola, S. R., (1998). The pattern of Housing quality in Osogbo, Osun State, Nigeria. *Ife Journal of Environmental Design and Management*. (ObafemiAwolowo University, Ile-Ife), 1-2, 109-120.
- Anselin, L., Cohen, J., Cook, D., Gorr, W. and Tita, G. (2000): Spatial Analyses of Crime. in *Criminal Justice*, 2000,Vol. 4, ed. David Duffee, Washington, DC: NIJ, 2000: 213 262.
- Badiora, A.I (2012). Spatio-Temporal Pattern of Crime and Delinquency in Ile-Ife, Nigeria.M.Sc. Dissertation, Department of Urban and Regional Planning, ObafemiAwolowoUniversity, Ile-Ife, Nigeria.
- Badiora, A.I., Fadoyin, O.P. & Omisore, E.O. (2013): Spatial Analysis of Residents' Fear and Feeling of Insecurity in Ile-Ife, Nigeria. *Ethiopian Journal of Environmental Studies and Management*, 6(3), 317-323, DOI: 10.4314/ejesm.v6i3.13
- Badiora, A.I; Okunola, O.H., & Ojewole, O.S. (2014): Crime Statistics in a Nigeria Traditional City: A Geographic Analysis. *Journal of Asian and African Studies*. 1-15. <https://doi.org/10.1177/0021909614552917>
- Bedenbaugh, C.P. (2003): Measuring Fear of Crime on Campus: A Study of an Urban University. *LSU master's theses*. 537. http://digitalcommons.isu.edu/gradschool_theses/537
- Bello V.A. (2011): The Impact of Urban Crime on Property Values in Akure, Nigeria, Paper for FIG Working Week2011, Bridging the Gap between Cultures, Marrakech, Morocco, 18 – 22 May, 2011
- Carpenter, D. and Nevin, R. (2009). Environmental causes of violence. *Journal of Physiology & Behaviour*, 99, 260-268. DOI: 10.1016/j.physbeh.2009.09.001
- Ceccato, V. & Nalla, M. K. (2020): Crime and Fear in Public Places, Towards Safe, Inclusive and Sustainable Cities, <https://doi.org/10.4324/9780429352775>
- Charron, M. (2012). Neighbourhood characteristics and the distribution of crime in Toronto: Additional analysis on youth crime. *Crime and Justice Research Paper Series*. Ottawa, ON: Statistics Canada.
- Chataway, M.L., Mellberg, J. (2021): Fear of crime in Brisbane city: revisiting the importance of 'context' in the development of fear of crime. *Crime Prev Community Saf* 23, 137–154. <https://doi.org/10.1057/s41300-021-00111-3>
- Clemente F. & Kleiman M.B. (1977). Fear of Crime in the United States: A Multivariate Analysis. *The Social Forces*, 56(2), 519-531, <https://doi.org/10.2307/2577738>
- Cohen, M.A. (2008). The effect of crime on life satisfaction. *Journal of Legal Studies*, 37(2), 325–353; <https://doi.org/10.1086/588220>
- Covington, J. & Taylor, R. (1991): Fear of Crime in Urban Residential Neighborhoods: Implications of Between- and Within-Neighborhood Sources for Current Models. *The Sociological Quarterly*. 32 (2), 231-249.
- Department of Equality, Justice, and Law Reform, Annual Report (2009): Working for a safer, fairer Ireland. Document available on www.justice.ie
- Donnelly, P. (1989): Individual and Neighborhood Influences on Fear of Crime. *Sociological Focus*, 22(1), 69-85. Retrieved October 27, 2020, from <http://www.jstor.org/stable/20831499>
- Egunjobi, L., (1995). Osogbo: Aspects of urbanization, physical planning and development. In: Adepegba, CO. (ed.). *Osogbo: Model of growing African Town*. Institute of African Studies, University of Ibadan, Nigeria.
- Fabiyi, O. (2004): Gated Neighbourhoods and Privatisation of urban security in Ibadan metropolis. Occasional publication, No 16 IFRA.Ibadan.
- Fajemirokun F; Adewale O., T. Idowu; Oyewusi A., and B. Maiyegun (2006). A GIS Approach to Crime Mapping and Management in Nigeria: A Case Study of Victoria Island Lagos. *Shaping the Change XXIII FIG Congress Munich, Germany*, October 8 – 13, 2006.
- Fatusin, A.F., Oladehinde, G.J. & Ojo, V. (2019). Urban Expansion and Loss of Agricultural Land in Osogbo, Osun State Nigeria, using Multi-Temporal Imageries. *Journal of African Real Estate Research*, 4(1), pp.139-156. DOI: 10.15641/jarer.v4i1.735.
- Ferraro, K. F. (1995): Fear of crime: Interpreting victimization risk. Albany: State University of New York Press.
- Garofalo, J. (1981): The fear of crime: Causes and consequences. *Journal of Criminal Law and Criminology*, 72, 839-857. <https://doi.org/10.2307/1143018>
- Gray, E., Jackson, J., & Farrall, S. (2008): Researching everyday emotions: Towards a Multi-disciplinary investigation of the fear of crime. In: Kury, H. (ed.). *Fear of crime-Punitivity. New developments in theory and research*. Bochum: Universitätsverlag-r.N.Brockmeyer, 3-24.
- Hilinski, C.M., Neeson, P.K., and Andrews, H. (2011): Explaining Fear of Crime Among College Women, in *Their Own Words*. *Southwest Journal of Criminal Justice*, 8(1), 112-127
- Hinkle, J. C., & Weisburd, D. (2008): The irony of broken windows policing: A micro-place study of the relationship between disorder, focused police crackdowns and fear of crime. *Journal of Criminal Justice*, 36(6), 503-512. <https://doi.org/10.1016/j.jcrimjus.2008.09.010>
- Jackson, J. (2006): Introducing Fear of Crime to Risk Research ,*Risk Analysis* 26(1): 253-264; DOI:10.1111/j.1539-6924.2006.
- Jayamala M (2008): Trends and Spatial Patterns of Crime in India: A Case Study of a District in India. A doctoral dissertation in sociology, Annamalai University, Indian
- Johnson, Richard. (2015): Reducing Fear of Crime and Increasing Citizen Support for Police. September. Received from http://www.patc.com/weeklyarticles/print/2015_johnson_reducingfear.pdf (accessed 1 May 2019)
- Lewis, D. and Salem, G., (1986): Fear of Crime: Incivility and the production of a Social Problem. Transaction Publishers

- Morrison, K.M. and Rockmore, M. (2021): Crime and Political Participation in Africa: The Role of Insecurity, *Journal of African Economies*, 30(2), 160–182, <https://doi.org/10.1093/jae/ejaa004>
- Murray, A.T., McGuffog, I., Western, J.S., & Mullins, P. (2001): Exploratory Spatial Data Analysis Techniques for Examining Urban Crime. *British Journal of Criminology*, 4, 309-329. DOI:10.1093/BJC/41.2.309
- Naghibi, M., Faizi, M., Khakzand, M., & Fattahi, M. (2015): Achievement of Physical Characteristics of Security in Residential Neighborhoods. *Procedia - Social and Behavioral Sciences*, 201:265-274, DOI: 10.1016/j.sbspro.2015.08.175
- Näsi M, Tanskanen M, Kivivuori J, Haara P, Reunanen E. Crime News Consumption and Fear of Violence: The Role of Traditional Media, Social Media, and Alternative Information Sources. *Crime & Delinquency*. 2021;67(4):574-600. doi:10.1177/0011128720922539
- Nigerian Police Force (2010): Annual Report
- Obasola, K.E. (2013): Religious Imperatives as Panacea to Crime and Violence Among Youths in Nigeria. *European Journal of Business and Social Sciences*, 2(8), 112-122
- Onoge O.F (1993): *Social Conflicts and Crime Control in Nigeria*. Lagos: Malthouse Press.
- Quann, N., & Hung, K. (2002): Victimization experience and the fear of crime. A cross-national study. In P. Nieuwebeerta (Ed.), *Crime victimization in comparative perspective. Results from the International Crime Victims Survey, 1989–2000* (301–316). The Hague: NSCR, BJU.
- Rader, N. E., Cossman, J. S., & Porter, J. R. (2012): Fear of crime and vulnerability: Using a national sample of Americans to examine two competing paradigms. *Journal of Criminal Justice*, 40(2), 134-141. DOI: 10.1016/j.jcrimjus.2012.02.003
- Rader, N.E. (2017): *Fear of Crime*, Oxford Research Encyclopedia of Criminology and Criminal Justice
- Schmallegger, F (2004): *Criminal Justice: A Brief Introduction*, 5th (ed). New Jersey: Pearson Prentice Hall. *African Journal of Law and Criminology*, 1(1), 131 -139.
- Sesan, G., Soremi, B., and Oluwafemi, B. (2012): *Economic Cost of Cybercrime in Nigeria Paradigm Initiative Nigeria*, report on the output for the Cyber Stewards Network project of the Citizen Lab, Munk School of Global Affairs, University of Toronto, and supported by IDRC. September, 2012: [http:// www.pinigeria.org/download/cybercrimecost.pdf](http://www.pinigeria.org/download/cybercrimecost.pdf) (Accessed 28th November, 2020)
- Snyder, H., and Mulako-Wangota J. (2015): Arrest Data Analysis Tool. Available from www.bjs.gov
- Soares R. (2006): The Welfare Cost of Violence Across Countries. *Journal of Health Economics*, 25(5), 821-846, DOI: 10.1016/j.jhealeco.2005.10.007
- Sulemana, I. (2015): Effect of fear of Crime and Crime victimization on Subjective Well-Being in Africa. *Social Indicator Research*, 121(3): 849 – 872, DOI: 10.1007/s11205-014-0660-4
- Truman, Jennifer (2005) «Predictors of Fear of Crime and the Relationship of Crime Rates and Fear of Crime», *The Pegasus Review: UCF Undergraduate Research Journal*: 1(1) <https://stars.library.ucf.edu/urj/vol1/iss1/3>
- Tseloni, A. and Zarafonitou, C. (2008): Fear of crime and Victimization: A Multi-level analysis of competing measurements. *European Journal of Criminology*, 5,387-409. <https://doi.org/10.1177/1477370808095123>
- UN Habitat (2007): *Enhancing Urban Safety and Security: Global Report on Human Settlements*.
- Vanderveen, G. (2006): *Interpreting Fear, Crime, Risk & Unsafety* The Hague: BJU Legal Publishers.
- Wayne, T. (2008): *An Investigation into the Fear of Crime: Is there a Link between the Fear of Crime and the Likelihood of Victimization?* *Internet Journal of Criminology*. www.internetjournalofcriminology.com
- Yazdanfar, S.A & Nazari, N. (2015): Proposed Physical-environmental Factors Influencing Personal and Social Security in Residential Area. *Procedia – Social and Behavioral Sciences* 201:224-233, <https://doi.org/10.1016/j.sbspro.2015.08.171>