Investigating Social and Economic Components of Strategic Business Development Conditions in an Information Economy: A Case of Ukraine

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Abstract. The present time is characterized by constant economic, social and cultural, political changes that cover the whole world. In the conditions of globalization there are cardinal shifts in the sphere of international relations and international business, characterized by transformational, modernizing changes, and have a direct impact on the development of economies around the world, including Ukraine. Globalization has also contributed to the formation of a new era - the era of information society. By the transition to the information society, the level of social and economic development is related to the access to information resources. A new economic sector is being created, where intellectual, social and investment capital place an increased role. The aim of the study is to assess the relationship between FDI attraction in Ukraine and its main macroeconomic indicators in the context of socio-economic development of business and globalization. The novelty is the substantiation of the directions of attraction of investments in the economy of Ukraine. The study is based on the analyzed macroeconomic indicators for the period 1998–2018, which made it possible to select those that have the greatest impact on FDI. The method of modeling economic processes is used to identify the effect of global influence on attracting foreign investment as a socio-economic component of strategic business development in the economy of Ukraine. The results of the simulation showed: achieving a high level of dynamics of FDI attraction in Ukraine in recent years; the existence of a strong link between FDI and foreign trade.
1 Introduction

In the context of globalization, the basis of strategic business development is no longer an extensive industrial method of mass production of goods and services and spontaneous self-regulation, but accumulated information resources, advanced information and communication technologies, innovative and synergistic way of producing new scientific knowledge and information products and services. The modern era is characterized by constant transformation and transition of the society from the outdated entropy-market system to a new highly organized management system [1]. This is a system in which knowledge along with other types of economic resources is the source of growth. A dominant factor is the process of the formation and use of intellectual capital, ensuring the creation of high-tech and scientific products, provision of highly qualified services, which leads to the increased competitiveness of business and the economy as a whole.

In such conditions of today, the formation of information society takes place, which reflects the main challenges of a rapidly changing world. Social, economic theory has revised its own preconditions, categorical structures, changes in the status and objectives of theoretical knowledge [2–4]. Thus, Wallerstein notes that “the society of the first half of the XXI century in its complexity, instability and at the same time openness far exceeds everything we saw in the XX century. The modern world system as a historical system has entered a stage of final crisis, and is unlikely to exist in fifty years” [4].

It should be noted that the modern period has a global character and affects basic principles, foundations of business organization, economy of most countries. The epoch of the consciously planned, programmed, purposeful sustainable development is coming. The current crisis is a crisis of the industrial-market paradigm, ideology, concept, model of the world economy development, which should be replaced by a new innovative-synergistic information paradigm, a model of the social and economic development, formation of knowledge economy [5]. In such a model of the development, the main role is played by a highly qualified specialist, a carrier of intellectual capital and creative and innovative abilities, and who acts as the main driving force in ensuring the business competitiveness.

In the era of information economy, as noted by leading experts, it is worth talking about the emergence of a new type of competition - hypercompetition or global innovation competition [6]. That is, the controlled hypercompetitive development of global, regional markets in the conditions of advanced dominant innovations leads to the integration into global structures and includes new advanced methods of the programmed, controlled influence on goals, motives, interests, needs and economic behavior of people in order to get benefits and effects.

In such conditions, nation-states compete more and more diversely and fiercely with each other for new scientific knowledge, the right to control and regulate resources, information and financial flows, place and share in world markets, ownership of intellectual
and information capital, the right to control and manage economic processes, that determines their leadership and high competitiveness in world markets. However, at the same time, new global (supranational) institutions and centers of management, coordination and control of the national, regional and world economy as a whole are being formed. Methods, mechanisms and forms of economic regulation and competition at the global, regional, national, sectorial and local levels are changing qualitatively, becoming more flexible and active.

Undoubtedly, the leading place in the modern information economy is occupied by huge companies - multinational corporations. It is these corporations that offer innovative products, services, maintenance and management that are characterized by global innovation.

2 Literature Review

Among the publications related to the issues of this article, the following research vectors should be noted:

1. Research of theoretical and methodological aspects of the information economy formation.

New approaches to the characterization of the globalized world, in which modern business is developing, are laid by Wallerstein, who defined globalization as part of objective reality. According to his conception, capitalism immediately began developing as a holistic system of world relations, the individual elements of which were national economies. Globalization, according to Wallerstein, also looks like a “misleading concept”. Therefore, speaking about the discourse of globalization, the scientist argues: “discourse is in fact a gigantic misunderstanding of current realities - a deception imposed on us by influential groups and, worse, often imposed on us by ourselves in despair. This discourse forces us not to notice real problems before us and not to understand the historical crisis in which we find ourselves”.

That is, Wallerstein focuses on risks and problems of the modern world, and challenges that will face all participants in world economic relations [5].

Theoretical substantiation of the formation and development of information economy was originally accumulated in the theory of post-industrialism, in which the analysis of knowledge industry and the role of information in modern economic relations occupies a prominent place.

One of the founders of the concept of post-industrial society is Bell, who, based on the analysis of economic and social processes in the United States in the postwar period, formulated the basic elements of the post-industrial theory. The author places considerable emphasis on the formation of service economy, origin of scientific knowledge, positioning of post-industrial society in the general model of social progress [6].

D. Bell identifies priority services in information society, such as: transition from post-industrial to service society; codified theoretical knowledge for the implementation of technological innovations; transformation of new “intelligent technology” into a key tool of the system analysis and the decision-making theory.
In addition, he argues that now the formation of a new social system based on telecommunications gets a significant importance for economic and social life, for the methods of knowledge production and for the nature of human labor. Moreover, in fact there is a parallel formation of post-industrial society with a revolution in the organization and processing of information and knowledge [7]. This analysis is gradually separated into a new scientific discipline - the theory of information economy.

According to Toffler, post-industrial civilization has become a product of new technologies, and the third wave of civilization marks the emergence of “super-industrial society” [8]. In this order, all previous rules and principles of economic models are leveled and the opposite begins. Production also has a different nature, it is possible to work not in offices, but at home, a self-service economy emerges when production and consumption are concentrated in one place.

Among the Ukrainian scientists who study the problems of information economy, it is worth noting Shkarlet, who in particular provided the author’s interpretation of information economy, the essence of which is to consider it as a type of economic system, in which information plays a key role in the development of major areas and industries of national production, is an integral part of the implementation of the processes of production, distribution, exchange and consumption [9].

2. Identification of the essential content and levels of the information economy manifestation in terms of the impact on business.

The leading researcher of the modern information society is Castells, who makes an attempt to comprehend a fairly rapid and uneven, in pace and space, the development of communication capabilities of society, assessing the widespread use of the Internet. The new social form - network society - acquires a global form, differing in specific manifestations, and has significant differences in its impact on people's lives depending on the history, culture and social institutions [10–12].

Castells critically analyzes the Internet as a major factor in globalization. Reducing the number of traditional workers increases the flexibility of economy, which methods of the activity organization spatially cover the entire labor market, forming a new social structure, which Castells calls a network society. The modern economy is characterized by a significant increase in productivity, which decisive growth factors are investment in information technology and high productivity in the computer industry. The main asset of entrepreneurs is the mind and experience in terms of the minimum necessary “infrastructure” of production: a computer, telephone, workplace, which can be outside the office.

One of the representatives of the information economy platform is Joseph Stiglitz, who formulated theoretical foundations of its development and, in addition, practically tested his theory.

Joseph Stiglitz with George Akerlof and Michael Spence were awarded the Nobel Prize for developing the market theory with asymmetric information. The American scientist was able to prove that the understanding of asymmetric information allows a better understanding of many economic phenomena. The information technique of asymmetry is called screening. One of Stiglitz’s best-known studies is screening, a
method used by one economic agent to extract personal information from another [13–
17].

The asymmetry of information not only leads to transaction costs for data retrieval, but is a structural problem that can change markets for the worse and even lead to their decline. In his work, the scientist analyzed the impact of asymmetric information on markets and different levels of economic development.

In modern society, information technology is becoming the most important factor that has a growing impact on social and legal relations. However, if in the Western scientific literature, the last decades have been marked by increased attention to legal problems of information society, then in the domestic science there are not enough holistic concepts that focus on information issues. Works of Vitlinsky and Katunina are very prominent, within which, a scheme of signs and markers of digital economy is provided, among them they named the following:

– conditionality of economic processes by rapidly implemented systemic changes in the essence, format and a number of aspects of the behavior of the economic environment;
– development of forecasting tools based on intellectual and mathematical apparatus and the latest model and information technologies aimed at deepening the degree of the events predictability;
– significant transformations taking place in the real sector of the economy and practice of the managing complex of social and economic systems [18].

Bairachna analyzes modern specifics of the information society formation and reveals the problem field of information society. According to the scientist in the information society, information is the main tangible and intangible value and the most important factor in the development of the individual and society. The second most important value is knowledge as the ability to obtain reliable, objective and comprehensive information and the ability to interpret it critically. According to her, the legal field of information society, which is currently being formed, is the most proportional to the problems of today; it contributes to the humanization of information society and its daily functioning [19].

For a modern understanding of science, it is important to consider that the leading trend is the cooperation of research between different countries, which contributes to the development of Internet technologies; different states, individual scientists, businesspersons, business entities join the network.

Despite extensive research on theoretical and applied developments in international business development, general problems of combining the economic component of strategic business development and socially oriented business in the information economy remain open, which determines the relevance and direction of further research.

3 Materials and Methods

Taking into account the peculiarities of TNC business development, we study the movement of foreign investment in Ukraine. The method of modeling economic processes to identify the effect of global influence on attracting foreign investment using the software
product E-Views was tested. This study is based on the analyzed economic indicators for the period 1998–2018, which allowed the authors to choose those of them that have the greatest impact on the inflow of foreign investment into the economy of Ukraine, which in particular include: GDP (shows the scale of economic activity), ES (shows the competitiveness of domestic services in the world market), IS (shows the volume of foreign services), LM – number of employed population (reflects human resources, potential of Ukraine. Statistical data for analysis are taken for the period 1998–2018 on the basis of data from the State Statistics Service of Ukraine [20].

The authors built a multifactor regression model, namely: the hypothesis on the influence of selected economic factors on foreign direct investment in the current conditions of the information economy development.

A general view of the FDI model illustrating the relationship of selected variables is described by the following equation:

\[ \text{FDI} = f(\text{GDP, ES, IS, LM}) \]

Where, FDI – direct foreign investments, US $ million;
GDP – GDP of Ukraine, US $ million;
ES – export of services, US $ million;
IS – import of services, US $ million,
LM – employed population, thousands of people;

In the process of analyzing the model, the authors constructed a correlation matrix that explains the relationship between variables. Correlations between the variables of this model have been identified. The model is adequate if it reflects current trends in economic processes. The constructed model was tested for autocorrelation and tests for heteroscedasticity, i.e. classical assumptions and testing of the predictive quality of the regression model. The results of the author’s model proved its adequacy and high quality.

4 Results

4.1 Strategic Business Development: Place of Intellectual and Social Capital

Global innovation is, first of all, the offer of advanced innovative highly competitive goods and services with qualitatively new, and in most cases, universal functions and consumer properties which have steady demand in world markets and will receive the status of global novelties, brands. Changes in the global market also affect changes within organizations, which must adapt as quickly as possible to new conditions in order to thrive in the market. One way they can follow global trends is to make changes to their business strategy [21].

It is worth noting that large corporations do not focus on the single global market, but in regional blocs. Due to government actions and cultural differences, the world is now divided into three blocks and is developing in the EU-US-Japan triad. In order to achieve success and a certain level of competitiveness, most top managers of large enterprises, including industries such as chemicals or the automotive business, today focus on national and regional strategies. Stagnation of a global strategy can only be
justified in a few areas, including home appliances; in others, such as the automotive industry, regional services are required.

Proponents of globalist theories argue that goods are produced and distributed evenly around the world. However, we’d like to note that goods produced in the United States, the EU or Japan, respectively, are distributed in the North American Free Trade Area (NAFTA), Europe and a small number of countries in Asia and Oceania (the main economic centers are the United States, the EU and Japan, respectively). As proof, here are the facts: more than 90% of cars produced in Europe are sold in the same area; about 90% of paint, steel, electronic devices, energy, transport services are produced and used according to the regional principle of the triangle [22].

In general, a significant proportion of TNCs sell an average of 80% of their share of the triad in the domestic market. Therefore, the world of international business is not global, but regional; and only a small proportion of corporations operate in all regions of the triad. Thus, world trade is developing within the triad, as evidenced by indicators of exports and imports. Only a small proportion of goods and services end up on another continent. Centers of this triad do not rely on their partners from other parts of the world, but rely mainly on neighboring countries in their region.

In addition, today not only the economic component is important for business competitiveness, but also social responsibility. Socially responsible business is preferred by all stakeholders. For example, one of the world’s leading companies with a multibillion-dollar capitalization is Google’s search and service system, which can be described as global, innovative and competitive. It is the leading, global TNCs, such as IBM, Coca-Cola, General Motors and others that provide innovation, high dynamism, competitiveness, leadership in global markets and at the same time are socially responsible.

For host economies such as Ukraine, TNCs have a number of advantages, in particular: growth of foreign investment inflows, growth of export-import operations, in particular in the field of services, growth of investments in intellectual assets, in the social sphere, etc. The dynamics of FDI attraction is the basis of long-term development of the economy, the basis of the reproduction process, which will contribute to the expansion of high-tech forms of reproduction of fixed capital and the accumulation of highly intellectual capital [23].

Through the use of intellectual and social capital, creative abilities of specialists and company management, ICT, the position of business in world markets increases. Intellectual and social capital is becoming one of the important properties of competition.

We consider intellectual capital as intellectual abilities of people used by corporations in the process of their intellectual work. The concept of intellectual capital is introduced into scientific circulation by the Canadian-American economist of the twentieth century Galbraith, who uses this term in the sense of intellectual activity [24]. Stewart was the first to study the nature of intellectual capital: “intellectual capital is intellectual material that includes knowledge, experience, information, intellectual property and participates in the creation of values” [25].

Social capital, which affects the competitiveness of corporations, determines the access to resources and information through appropriate channels, does not have a single clear definition due to its specific properties. Thus, today within the transition process
to a new economy, scientific and technological revolution and formation of information society, intellectual and social capital is the most important competitive advantage of business entities, and above all large corporations, as well as the most important resource of the country, able to ensure its future.

4.2 Econometric Modeling of the Factors Influencing the FDI Growth

The hypothesis is that in the conditions of information economy and socio-economic orientation of business at the present stage, TNC investments in Ukraine will contribute to GDP growth, increase in exports and imports of services (as a leading position in information economy), employment growth. We will analyze the data under the test hypothesis. Let’s consider the function $\text{FDI} = f(\text{GDP}, \text{ES}, \text{IS}, \text{LM})$ and check it with the help of the econometric model.

The correlation matrix that explains the relationship between our chosen variables (GDP, ES, IS, LM) and the results of multifactor regression are given in Tables 1 and 2, respectively.

### Table 1. Correlation

|       | FDI   | GDP   | ES     | IS     | LM     |
|-------|-------|-------|--------|--------|--------|
| FDI   | 1.000000 | 0.193852 | 0.965015 | 0.952300 | −0.301381 |
| GDP   | 0.193852 | 1.000000 | 0.232229 | 0.187561 | −0.212306 |
| ES    | 0.965015 | 0.232229 | 1.000000 | 0.977364 | −0.323867 |
| IS    | 0.952300 | 0.187561 | 0.977364 | 1.000000 | −0.331188 |
| LM    | −0.301381 | −0.212306 | −0.323867 | −0.331188 | 1.000000 |

Source: authors’ development

Table 1 presents a correlation matrix that explains the relationship between selected variables and shows their influence on foreign direct investments and incurred costs for innovations. Matrix constructed by us confirms the success of the model.

There is a strong positive correlation between FDI and ES, IS (correlation coefficient 96.5 and 95.2%, respectively), a slight positive correlation between FDI and GDP, and a small negative correlation between FDI and LM. With a negative correlation, a decrease in the value of a variable leads to an increase in another variable. With a positive correlation, an increase in the value of a variable leads to an increase in another variable. We can also observe a small correlation between all variables; an acceptable result of correlation between variables actually confirms that there is no multicollinearity (i.e. close interdependence between variables); therefore, our model is successful.

Regarding the quality requirements of the factors, we will apply the accepted average of 5–10% of the significance level. According to F-statistics, all the coefficients of the regression equation are not equal to 0 at the same time. In our equation, only exports of services are less than 5%; therefore, the most significant in this case is $\text{ES} = 2.26\%$.
As a rule, there are no strict requirements for the constant, but in our case, it is also significant (0.04%). The variables GDP, IS, LM are insignificant, since their prob. Are more than 5–10%.

$R^2$ shows the extent to which our chosen criteria and their number explain changes in FDI, i.e. our selected criteria explain 93.4% of changes in FDI growth. The correlation coefficient is 0.92, which indicates that there is a strong enough connection. The probability of accepting the null hypothesis of $F$-statistic = 0.00, i.e. close to zero, which confirms the need to take an alternative hypothesis, which speaks of the significance of the equation as a whole.

Table 2. The Results of Multi-factor Regression of FDI

| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|----------|-------------|------------|-------------|---------|
| GDP      | −0.004079   | 0.012456   | −0.327482   | 0.7475  |
| ES       | 3.852375    | 1.526452   | 2.523744    | 0.0226  |
| IS       | 1.584201    | 2.621942   | 0.604209    | 0.5542  |
| LM       | 0.005447    | 0.031089   | 0.175222    | 0.8631  |
| C        | −14422.12   | 4086.610   | −3.529116   | 0.0028  |

Information criteria - Akaike, Schwarz, Hannan-Quinn, Durbin-Watson are given in Table 2. We check the equation for the presence of autocorrelation using the Durbin-Watson test. This Durbin-Watson criterion $d = 1.14$. Using Durbin-Watson statistics in the table, we’ll determine significant points $d_L$ and $d_U$. For the number of observations 21 and 4 of variables at the significance level $\alpha = 5\%$ $d_L = 0.72$ and $d_U = 1.55$; at the significance level 1% $d_L = 0.93$ and $d_U = 1.81$. The interval between it is a zone of uncertainty: it means that we cannot unambiguously say whether there is an autocorrelation or not. Thus, the presence of higher-order autocorrelation should be checked using the Breusch-Godfrey test (Table 3).

Breusch-Godfrey test results: when lag = 2, the probability of accepting the null hypothesis is more than 5%, which means that this lag is not significant; when lag
Table 3. Autocorrelation test results

| Correlation LM Test | Prob RESID(-2) | Prob RESID(-1) | F(2,14) | F(1,15) |
|---------------------|---------------|---------------|---------|---------|
| lag 2               | 0.2195        | 0.2519        | 0.1099  | -       |
| lag 1               | -             | 0.0854        | -       | 0.0854  |

Source: authors’ development

Table 3 shows the presence or absence of autocorrelation.

\(= 1\), the probability of accepting the null hypothesis is 0.08, which is higher at 5% significance level, and means that we can accept the null hypothesis regarding the absence of autocorrelation, i.e. no autocorrelation. Probability of accepting the null hypothesis is 17.3%, i.e. we claim that in our model there is no autocorrelation of random deviations.

The following tests – are to check heteroskedasticity. Among these, we use the test White, Glejser, Breusch-Pagan-Godfrey, Harvey, ARCH to check the heteroskedasticity (i.e., non-constant dispersion) of random errors of the linear regression model. The test results are shown in Table 4.

Table 4. Heteroskedasticity test results

| Test results          | F-statistic | Obs*R-squared | Scaled explained SS | Prob. F(14,6) |
|-----------------------|-------------|---------------|---------------------|---------------|
| White                 | 2.214700    | 17.59513      | 13.93959            | 0.1678        |
| Glejser               | 1.604601    | 6.012313      | 5.098407            | 0.2215        |
| Breusch-Pagan-Godfrey | 1.079095    | 4.461620      | 3.534681            | 0.3995        |
| Harvey                | 2.146780    | 7.334308      | 4.875642            | 0.1220        |
| ARCH                  | 1.085220    | 1.137236      | -                   | 0.3113        |

Source: authors’ development

Table 4 shows the presence or absence of heteroskedasticity.

Let’s check for heteroskedasticity using the White test, which is universal. By the value of accepting the null hypothesis, all variables are not statistically significant, because the probability of accepting the null hypothesis. In addition, prob. \(F = 16.8\%\), which indicates the absence of heteroskedasticity.

Next check for heteroskedasticity is the case using the Glejser test for our variables. All variable models were also tested separately by the test. Not all variables are statistically significant, as the probability of accepting the null hypothesis is more than 5%, i.e. it can be accepted. Presence of regression as a whole is also high, i.e. in our model there is no heteroskedasticity, that means, the model residues do not depend on the selected variables.

Another test for the presence of heteroskedasticity is the Breusch-Pagan-Godfrey test. The probability of accepting the null hypothesis is 0.3995, which is more than 5%
and confirms the absence of heteroskedasticity. In all tests, the null hypothesis is the absence of heteroskedasticity, the alternative presence.

The next step of checking the model for quality is RESET Test, its coefficient is more than 10%, which testified to the sufficient quality of the proposed model. We check the model for explanatory ability, because the constructed model should accurately reflect the FDI growth using the available independent variables (Fig. 1).

![Graph](image)

**Fig.1.** Explanatory ability of the model. *Source: author’s development.*

As can be seen from the graph, the simulated Fitted values fairly accurately reflect Actual values, so by this criterion, the model is completely acceptable. Thus, our Eq. (1) is statistically significant, with a high coefficient of determination. The general view of the multi-regression model of the dependence of FDI growth on independent variables is as follows:

*Substituted Coefficients:*

\[
\text{FDI} = -0.00407912787279 \cdot \text{GDP} + 3.85237526917 \cdot \text{ES} + 1.5842014639 \cdot \text{IS} + 0.00544746124051 \cdot \text{LM} - 14422.1226435
\]

(1)

### 5 Conclusion

The current stage of development of the world economy is characterized by constant changes, which occur not only under the influence of globalization, but also Covid-19. The basis of strategic business development is information resources, ICT, innovation resources and investment capital. Covid-19 has made adjustments to the business process, which today suffers losses. At the same time, intellectual and investment capital will contribute to the further development of the business and its entry to a new level of organization and profitability. For the next two or three years the forecasts for the development of world business remain disappointing, with the exception of the pharmaceutical, logistics and IT businesses.

Global challenges facing the world, TNCs will lead to a new round of economic and business development.
Social and economic component of the strategic business development in information economy contributes to economic growth. In particular, for Ukraine as a result of regression it was found that the growth of FDI by 1% in the formation and development of information economy is most positively affected by exports and imports of services (385 and 158%, respectively); with an increase in GDP by 1%, the growth of FDI is almost unchanged; the level of the employed workforce also has almost no effect on the FDI growth.

In addition, the social and economic component of the business development contributes to the environment protection, infrastructure development, and not only of developed countries but also other regions and countries where the world’s leading TNCs develop their business. In turn, informatization destroys national and state frameworks and leads to the increased internationalization. In such circumstances, corporations can use more tools in organizing their business and get additional opportunities, as well as gain more free access to any information.

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