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COST-EFFECTIVENESS ANALYSIS OF NEW REMUNERATION PROJECT TOWARDS ACCOUNTABLE CIVIL SERVICE

The article considers main aspects of transparency and accountability of government initiatives on the example of the project of a new remuneration system for civil servants. Therefore, the author analyzes the project's cost effectiveness in the context of a three-year period and two pilot bodies in order to develop recommendations for improving transformation processes. A special formula was developed and calculations were made taking into account the method of cost-effectiveness analysis based on the factors of the conceptual model of the author's dissertation research. Thus, in addition to the effects indicated in the media by the authorized body (the project developer) on the factor "Human capital", the study also covers a wider range of aspects, namely, factors such as "Leadership", "Strategy", "Organization", "Resources" through the prism of "Citizen Centricity". It was found that there were no significant positive changes in performance during the analyzed period. And in some areas of work (such as "Organization", "Citizen Centricity"), there is a deterioration in results. Thus, the author summarizes the activities of local executive bodies as ineffective in relation to a two-fold increase in the wage fund. Taking this into account and the identified "bottlenecks", a number of recommendations for improving the activities, including legislative initiatives, are proposed. In general, the results of the study have direct practical significance, since they build a platform for scaling the analysis to the remaining pilot bodies in order to make timely changes during the piloting of the new remuneration system.

Key words: good governance, accountability, cost-effectiveness, remuneration, transformation, civil service.

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Есеп беретін мемлекеттік қызметі үшін еңбекақы төлеудің жаңа жобасы шығындарының тиімділігін талдау

Мақалада мемлекеттік қызметшілерге еңбекақы төлеудің жаңа жүйесі жобасының мысалында мемлекеттік бастамалардың айқындығы мен есеп берушілігінің негізгі аспектілері қарастырылған. Ол үшін автор трансформациялық процестерді жетілдіру бойынша ұсыныстарды әзірлеу мақсатында үш жылдық кезең мен екі пилоттық орган призмасындағы жоба шығындарының тиімділігіне талдау жүргізді. Автордың диссертациялық зерттеудің тұжырымдамалық моделінің факторлары негізінде шығындардың тиімділігін талдау әдісін ескере отырып, арнайы формула әзірленді және есептеулер жүргізілді. Осылайша, уәкілетті орган (жобаны әзірлеуші) «Адами капитал» факторы бойынша бұқаралық ақпарат құралдарында белгілейтін әсерлерден басқа, зерттеу, сондай-ақ аспектілердің неғұрлым кең шеңберін, атап айтқанда «Көшбасшылық», «Стратегия», «Ұйым», «Ресурстар» сияқты факторларды «Халыққа бағдарлану» призмасы арқылы қамтиды. Талданып отырған кезеңде қызметтің тиімділігіне айтарлықтай оң өзгерістер болған жоқ. Ал жұмыстың жекелеген бағыттары бойынша («Ұйым», «Халыққа бағдарлану» факторы) нәтижелердің нашарлауы байқалады. Осылайша, автор тұтастай алғанда жергілікті атқарушы органдардың қызметін еңбекақы төлеу қорының екі есе өсуіне қатысты тиімсіз деп түйіндейді. Осыны және жұмыста анықталған «тар жерлерді» ескере отырып, қызметті жақсарту бойынша бірқатар ұсынымдар, оның ішінде заңнамалық бастамалар ұсынылады. Тұтастай алғанда, зерттеу нәтижелері тікелей практикалық мәнге ие, өйткені жаңа еңбекақы төлеу жүйесін басқару кезеңінде уақтылы өзгерістер жүргізу мақсатында қалған пилоттық органдарға талдауды масштабтау үшін платформа болып табылады.

Түйін сөздер: тиімді басқару, есеп берушілік, шығындардың тиімділігі, еңбекақы төлеу, трансформация, мемлекеттік қызмет.

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Анализ эффективности затрат проекта новой оплаты труда на пути к подотчетной государственной службе

В статье рассмотрены основные аспекты прозрачности и подотчетности государственных инициатив на примере проекта новой системы оплаты труда государственных служащих. Для этого автором проведен анализ эффективности затрат проекта в призме трехлетнего периода и двух пилотных органов с целью выработки рекомендаций по совершенствованию трансформационных процессов. Разработана специальная формула и проведены расчеты с учетом метода анализа эффективности затрат на базе факторов концептуальной модели диссертационного исследования автора. Таким образом, помимо обозначаемых в средствах массовой информации уполномоченным органом (разработчиком проекта) эффектов по фактору «Человеческий капитал», исследование также охватывает более широкий круг аспектов, а именно такие факторы, как «Лидерство», «Стратегия», «Организация», «Ресурсы», сквозь призму «Ориентации на население». Установлено, что за анализируемый период значительных положительных изменений в эффективности деятельности не произошло. А по отдельным направлениям работы (фактор «Организация», «Ориентация на население») наблюдается ухудшение результатов. Таким образом, автор резюмирует, в целом деятельность местных исполнительных органов как неэффективную по отношению к двукратному увеличению фонда оплаты труда. С учетом этого и выявленных «узких мест» в работе предлагается ряд рекомендаций по улучшению деятельности, в том числе законодательные инициативы. В целом, результаты исследования имеют прямую практическую значимость, поскольку являются платформой для масштабирования анализа на оставшиеся пилотные органы в целях проведения своевременных изменений в период пилотирования новой системы оплаты труда.

Ключевые слова: эффективное управление, подотчетность, эффективность затрат, оплата труда, трансформация, государственная служба.

Introduction

According to a World Bank report, the concept of Good Governance, along with “capacity and efficiency in public sector management, legal framework for development, information and transparency”, implies accountability (World Bank, 1992: 4). The Organization of Economic Cooperation and Development also notes that ability of citizens to demand accountability and more open government is fundamental to Good Governance (OECD, 2014: 7). Accountability is also important for Kazakhstan, as it allows identify “weak points” and a vector for further development. The main goal is to become one of the 50 leading countries in the world, whose distinctive feature is the presence of an innovative and accountable civil service. The core principle is that any initiatives, especially those that incur costs from the state budget, should be transparent, and the results should be reported to the population.

Thus, one of the latest innovations in the civil service of Kazakhstan is the project of a new remuneration system for civil servants based on results, which has been launched in a pilot mode since 2018. The Agency for Civil Service Affairs and Anti-Cor-

ruption (currently the Agency for Civil Service Affairs), Ministry of Justice, local authorities (akimats) of Nur-Sultan and Mangistau region, and later additionally the akimats of Shymkent and Almaty acted as pilot bodies.

The project involves not just raising the salaries of employees and thereby improving the attractiveness of the civil service as a whole. The main premise is the start of transformational processes aimed at optimizing structural units, staff numbers, creating shared service centers, digitalization of business processes, etc. (Kairgeldy, 2018: 1).

According to the management of the state body responsible for the project, the positive effect is observed mainly on personnel issues (staff retention, reduced turnover, increased attractiveness, etc.) (Shpekbayev, 2019a: 2), (Shpekbayev, 2019b: 1), (Shpekbayev, 2019c: 1), (Shpekbayev, 2019d: 2).

At the same time, the question of the project’s effectiveness in other aspects (beside human resources) remains open, as well as in relation to the main beneficiaries – the citizens, given the focus on service-oriented, innovative public administration.

What has changed in the two years of implementation of the project in the pilot bodies? What is the effect?

This research is devoted to finding answers to these questions, which involves analyzing the project's cost-effectiveness in the context of a three-year period (2017-2019) and two pilot bodies based on the conceptual model of a dissertation developed by the author in order to propose recommendations for improving transformation processes.

The object of the study are the akimats of Nur-Sultan and Mangistau region (pilot bodies) since they represent two different territorial aspects of project implementation (capital and region) with their respective characteristics that affect on human capital, management, organizational hierarchy, and other features of transformation.

The subject of the research is an activity of these akimats within three-year period of new remuneration project pilot implementation. Appropriate indicators for activity's cost-effectiveness evaluation are given in the section devoted to research methods, which based on such factors as: Leadership, Strategy, Human Capital, Organization, Resources through the prism of Citizen-Centricity.

The novelty of the study is that in addition to the assessment of human capital (as has been repeatedly stated by the authorized body), a wider range of aspects is covered. This will allow us to get a multiplicative effect, as factors will be used to stimulate transformation by involving both managers and each individual employee in the change processes, starting with the formulation of strategy and ending with structural transformations and behavioral changes.

The results of the study will be used to scale up the approved method of analysis in other pilot bodies in order to openly discuss the "true" results of the project with the public on the way to accountable and effective public administration.

Literature Review

According to the best practices the World Bank, OECD and United Nations directly link issues of government accountability to the Good Governance (World Bank, 1992: 1; OECD, 2014: 21; United Nations, 2014: 3). At the same time, countries with an innovative civil service and smart e-government have a high level of accountability to the population (Great Britain, Canada, Singapore, South Korea, etc.). Any expenses from the state budget (taxpayers' money) must be justified. For this purpose, not only public discussions are held before the start of the project, but also hearing the results from both the implementing body and the controlling bodies.

According to Affiliated Network for Social Accountability these initiatives are possible if there

are factors such as: organized and capable citizen groups, government champions who are willing to engage, context and cultural appropriateness, and access to information. Thus, social accountability will contribute to improving the standard of living of the population and strengthening human rights.

Therefore, "it remains a big challenge for the public sector organizations to change their culture and administrative procedures towards customer oriented services, trust, shared commitments and also towards accountability" (Ken et al., 2006: 11).

"Change for transformation implies moving on to something better than before, an enhanced outcome, from better performance already achieved to win a customer to a state of excellence where the customer is delighted" (Sardana, 2015: ix). Therefore, one of the main factor for rapid change is an existence of transformational leadership within organization, which is associated with "professionals' understanding of professional quality" (Andersen et al., 2018: 107).

At the same time, each country and region has its own features, which should also be taken into account. For example, "the pattern of economic development, the nature of political leadership, the capability of the administrative system, the capacity of existing institutions, and the state of civil society are the most significant contextual factors influencing accountability practices" in South and South-East Asian countries (Ramanie et al., 2008:1).

The system of strategic personnel management assumes an integrated approach. To solve the tasks (strategic directions) assigned to the state body, it is necessary to take into account all aspects of this system. For example, to build a customer-oriented approach, it is necessary not only to train employees, increasing their competence in providing quality public services and providing explanations to the public and business, but also to consider reviewing the organizational structure, motivation system, selection and promotion, promotion and other aspects.

Therefore, in the last few decades, the role of human resources management services in organizations has significantly increased. Today, it is not a reactive personnel selection policy, but a preventive and proactive policy, including structuring and systematizing all areas and functional areas of the organization's activities.

Thus, strategic HR is an integrated approach to making decisions about the organization's intentions and plans related to the strategy, policy and practice of employment relations, search and selection of employees, training, development and management

of performance indicators, remuneration and labor relations.

However, if we consider the available theories on studying issue, a significant number of researches were conducted mainly on social projects and programs related to anti-corruption, as the most significant for the public. In turn, projects in which the direct beneficiaries would be the public sector employees themselves (such as the project of a new wage system), are less studied in terms of their effectiveness.

Over the years, many scientists and practitioners have addressed the issue of evaluating the effectiveness of public authorities. The theoretical basis for this is New Public Management approaches, which involve the introduction of corporate governance principles, KPI and SMART assessments, payment by results, etc. The issue of performance management was addressed by Moore M., Drucker P., Schumpeter J., Norton D., Kaplan R. and others scientists. The similarity of these authors' research papers is introduction of quantitative indicators (KPIs) to assess the performance of both the organization and each employee individually. And the correlation of the results obtained with the costs incurred.

Along with theoretical developments, there are country initiatives to assess the effectiveness of the state apparatus. The most well-known are Singapore's experience in applying financial management indicators (NPV), the UK's Green book central government guidance on appraisal and evaluation, as well as the Management Accountability Framework in Canada and others. These assessment systems serve as a basis not only for strengthening the accountability and transparency of public authorities, but also provide an impetus for improving many aspects, including strategic planning and management, the quality of public services, information openness, organizational transformation, etc.

Kazakhstan also has a system of annual performance assessment of public authorities, both at the central and local levels, which currently includes three main blocks: achievement of goals, organizational development and interaction with individuals and legal entities. In General, efficiency is defined as the ratio of the results achieved and the resources spent on it. However, taking into account the specifics of the civil service, efficiency is expressed in indicators, and effectiveness is expressed in budget expenditures (Junusbekova,

2015: 254), which is the basis of the cost-effectiveness analysis method.

Cost-effectiveness analysis and cost-benefit analysis are often used in such studies (Johnson, 2014: 3; Levin & McEwan, 2001: 27-28). Depending on the subject of research, a particular tool is used. At the same time, according to Levin and McEwan the first method is used if it is necessary to compare several alternatives with different units of measurement, which corresponds to the content of this article (Levin and McEwan, 2001: 27).

Thus, the lack of elaboration, both in theory and in practice, of the issue of the effectiveness of public sector projects aimed at improving the standard of living of civil servants and motivating them to work effectively for the benefit of society, was the impetus for this study.

Methodology

The key research methodology is the cost-effectiveness analysis. It allows us to determine the effect of the initiative based on a comparison of alternatives, identifying the most profitable and effective option. The method is widely used in developed countries for evaluating programs and projects in the social sphere, infrastructure, and construction. However, according to Johnson cost-effectiveness analysis is "currently underutilised in evaluations of governance and anti-corruption reforms in developing countries" (Johnson, 2014:iv).

Since the project of a new remuneration system for civil servants in Kazakhstan has been launched in a pilot mode, a study using the cost-effectiveness analysis will determine the most effective solution and the necessary adjustments for the subsequent scaling of the project throughout the country, which will be offered to the management of the state apparatus.

To use this research method, we propose a number of aspects and assumptions:

1) as the main factors selected: Leadership, Strategy, Human Capital, Organization, Resources. Each factor has its own indicators (Table 1).

Table 1 shows the indicators related to the factors of the conceptual model, as well as their sources. The mediating factor is a citizen-centered approach. These factors are included in the conceptual model of the author's dissertation research, tested by interviews (focus groups) and surveys in pilot bodies.

Table 1 – Indicators for cost-effectiveness analysis of the pilot project of a new remuneration system for civil servants

Factor	Indicators	Unit of measurement	References
Effects			
Leadership	Evaluation of overall effectiveness of a state body	%	Evaluation Center database
Strategy	Goal achievement	%	Evaluation Center database
Organization	Organizational development	%	Evaluation Center database
Human Capital	Net turnover	%	ACSA database
Mediating effect			
Citizen Centricity	Quality of public services delivery	%	ACSA database, MISD information
	Interaction with citizens	%	Evaluation Center database
Costs			
Resources	Budget of Payroll Fund	USD mln.	ACSA database
Note – compiled by authors			

Official data sources for calculating indicators are information of Center for evaluation of effectiveness of state bodies of JSC «Economic Research Institute» under the Ministry of National Economy of the Republic of Kazakhstan (Evaluation Center), Agency of the Republic of Kazakhstan for Civil Service Affairs (ACSA) and the Ministry of Information and Social Development of the Republic of Kazakhstan (MISD);

2) Resources factor determines the costs, and the remaining factors determine the effects (1):

$$C(f_v) \leq E(f_i; f_{ii}; f_{iii}; f_{iv}) \pm E(f_M) \quad (1)$$

C – costs of project implementation;

E – effectiveness of project implementation;

$f_i; f_{ii}; f_{iii}; f_{iv}$ – factors for evaluating the effectiveness of the project, such as Leadership (i), Strategy (ii), Human Capital (iii), Organization (iv);

f_M – mediating factor (Citizen centricity);

f_v – the factor that determines the project costs, namely the change in the size of the Payroll Fund for civil servants of the pilot bodies (Resources, v);

3) indicators (factors) have different units of measurement and indirect influence, so the following hypotheses are formulated:

H0: a positive change in all factors justifies the resources spent. At the same time, the value of the mediating factor is a decisive factor for assessing the overall indirect effect.

H1: if there are no positive effects on at least one factor, the project is considered as insufficient;

4) analysis will also use the methodology of the Evaluation Center, which assumes that:

90 or higher points – a high degree of efficiency;

70 – 89,99 – average degree of efficiency;

50 – 69,99 – low degree of efficiency;

up to 49.99-inefficient activity;

5) period of analysis includes 2017-2019 (2018-2019 – project implementation in pilot mode; 2017 – for comparison). However, the Evaluation Center’s information for 2019 will only be available in the second half of 2020. Therefore, two years will be compared for some indicators, which does not detract from the significance of the study;

6) analysis is carried out on the basis of two pilot local authorities – akimats of Nur-Sultan and Mangistau region.

Based on the formula above, we will calculate the effects obtained by the research objects in dynamics. Also, it is expected to identify the “bottlenecks” and strengths of each akimat, taking into account the methodology of the Evaluation Center.

Results and Discussion

In order to evaluate the effectiveness of the pilot project “new system of remuneration for civil servants”, we used a method of cost-effectiveness analysis, which allowed us to determine how the current results of the project meet the financial resources spent. As can be seen from Table 2, the Leadership factor shows a positive dynamics in improving the efficiency of the mayor’s office of the capital. At the same time, the local executive body of the Mangystau region shows a negative trend, while being below the national average.

Table 2 – Indicators of Nur-Sultan and Mangistau region akimats' activity for 2017-2019

Factor	Indicators	Year	Nur-Sultan akimat	Mangistau region akimat	Local authorities' average	Country's average
<i>Effects</i>						
Leadership	Evaluation of overall effectiveness of a state body	2017	67,4%	58,7%	64%	69,4%
		2018	69,2%	54,1%	69,2%	72,3%
Strategy	Goal achievement	2017	73,5%	64,4%	69,5%	74,4%
		2018	85,7%	68,6%	77,8%	82,1%
Organization	Organizational development	2017	73,3%	56,9%	68,3%	68,8%
		2018	66,3%	49,2%	68,2%	69,8%
Human Capital	Net turnover	2017	5,3 %	7,5 %	5,7 %	6,2 %
		2018	2,5 %	3,6 %	5,2 %	6,2 %
		2019	1,6 %	4,6 %	5,1 %	6 %
<i>Mediating effect</i>						
Citizen Centricity	Quality of public services delivery	2017	72,8%	23,0%	67,5%	65,9%
		2018	66,7%	38,3%	69,6%	72,4%
		2019	71,2%	74,0%	75,3%	74,8%
	Interaction with citizens	2017	59,9%	53,5%	69,4%	71%
		2018	55,5%	44,4%	61,5%	66,4%
<i>Costs</i>						
Resources	Budget of Payroll Fund	2017	6 mln. USD	8,7 mln. USD	-	-
		2018	12,9 mln. USD	17,1 mln. USD	-	-
		2019	14,1 mln. USD	18,5 mln. USD	-	-
Note – compiled by authors based on data from databases of Evaluation Center (2020); ACSA (2020); MISD (2020)						

Taking into account the Strategy factor, there is a positive change in the quality of strategic planning and budgeting in both pilot bodies, which is due to the delegation of these powers to the level of state bodies and akimats and, accordingly, to the efficiency and flexibility in decision-making.

A downtrend in the Organization factor is observed for each research object. This indicator reveals the effectiveness of both structural changes and organizational culture. If there are improvements in the latter aspect across the entire system and pilots (enhanced ethical standards, identified ethics officers, reduced processing, optimized business processes, etc.), then questions arise about structural changes.

Thus, in the Mangystau region, there were no significant changes in the structure of the local public authority during the reviewed period. At the same time, the Department of Construction and The Department of Architecture and Urban Planning have been merged, eliminating duplication of functions. Excessive management structures have

been optimized, and 24 units have been allocated to strengthen the executive level. The position of Deputy Director in small departments (for example, the Youth Policy Department – seven units, Tourism Department and Department for Languages Development, Archives and Documentation – five units each) were excluded.

At the same time, the mayor's office of the capital has carried out a large-scale transformation, in which:

- number of departments has been reduced from 30 to 21;
- all control functions are concentrated in one Department (architectural and construction control, licensing, veterinary and housing inspection);
- a unified public authority for state procurement for the capital's development budget (Assets and State Procurement Department) is established;
- unified service for personnel management and development (recruitment, adaptation, evaluation, etc.) is founded;

- Department of Urban Environment Regeneration of the capital is created (on the example of Musanada, United Arab Emirates);

- Monitoring and Rapid Response Situation Center is open and functioning.

However, the results of the akimats are equally negative. A possible explanation is the unstable moral and psychological climate due to the transformation. In regard to the significant optimization of management levels and the transfer of staff numbers to the district level, there was a reduction in staff.

In General, the trend is positive for the Human Capital factor. These regions are characterized by a competitive private sector with a high level of remuneration (oil and gas industry, trade, financial activities, etc.).

Therefore, monetary motivation by increasing wages by an average of two times allowed to keep employees inside the civil service system, thereby ensuring its stability. For example, if earlier the head of the Department received about 670 USD, currently – 2 000 USD. The same applies to executive positions. The salary of the chief specialist increased from 305 USD to 800 USD. This amount of official salaries corresponds to the median market values of the private sector.

In turn, this has led to an improvement in human resources indicators. For example, the number of

vacancies in the Mangystau region has been reduced by almost two times (72 positions have been replaced), and at the rural level – by four times. The local service has become more attractive to private sector professionals, with an eightfold increase in the number of appointments.

According to the mediation factor, Citizen Centricity (similar to the Organization factor) is characterized by a negative dynamics in pilots. Thus, the mayor's office of the capital has a negative trend in 2018, that is, during the period of transformation and, therefore, the collapse of the work of most service providers for a quarter. In the Mangystau region, the quality of public services has significantly improved (an increase of about three times), which is due to the start of digitalization of business processes and the transition to providing services mainly through the e-government portal. However, in aggregate, the region has shown a downward trend in the quality of interaction with citizens.

In General, the results of the analysis are systematized in Table 3.

As follows from Table 3, the strengths of the work of the akimats are the formation of strategy and budget planning, as well as reducing the turnover of staff. In addition, the local executive body of the Mangystau region has experienced a significant jump in the quality of services provided to the population.

Table 3 – The final result of the analysis

Factor	Effect	
	Nur-Sultan akimat	Mangystau region akimat
Leadership	Positive	Negative
Strategy	Positive	Positive
Organization	Negative	Negative
Human Capital	Positive	Positive
Citizen Centricity	Negative	Negative
Total Result	Negative	Negative
Note – compiled by authors		

At the same time, “bottlenecks” in the activities of akimats are organizational culture and structural changes, which should be paid attention to.

Thus, returning to our formula and hypotheses, it should be concluded that none of the pilot bodies under consideration showed a cumulative improvement in performance. The results confirmed the H1 hypothesis.

In General, according to the methodology of the evaluation Center, the activities of the pilot bodies are rated as low-effective and, accordingly, the pilot project requires adjustments. In turn, there are a number of questions about the appropriateness of budget expenditures to increase wages (the size of the Payroll Fund has increased by two times) and the correctness of the transformations carried out.

Discussion of these issues allows you to develop certain recommendations.

Conclusion

Public sector initiatives, especially those that incur significant expenditures from the state budget, should be thoroughly reviewed for their feasibility. This is the focus of this study, which was able to find answers to the questions raised. For example, over the past two years, despite attempts at transformation, there have been no significant improvements in the activities of the pilot bodies (question 1). This is evidenced by the data provided for a comprehensive assessment of the performance of akimats (tables 2 and 3). At the same time, if there is a positive groundwork for strategic and budgetary planning and staff turnover, then the remaining aspects of activity should be also enhanced (question 2). This allowed us to develop a number of recommendations before scaling the pilot project for the entire system.

First. The analysis showed a lack of a holistic approach to the ongoing changes. In particular, there is an emphasis on structural transformations of state bodies. However, additional aspects that are responsible for the success of any organization are not taken into account. Namely, capacity building on the factors of Leadership, Strategy, and Human capital in the prism of ensuring orientation to the needs and interests of the population.

Thus, the Agency for Civil Service Affairs, as the developer of the project, and the Ministry of National Economy, which is responsible for the development of the public administration system, are invited to develop Methodology on change management for state bodies and subordinate organizations. The main feature of this document is not the declarative or template nature of recommendations, but a step-by-step guide with key aspects to pay attention to.

The current legislative framework provides for a basic scheme of local government with a typical structure of akimats, as well as the recommended number of individual managerial positions. At the same time, functional reviews that were conducted by consulting companies commissioned by the Ministry of National Economy are not publicly available. Thus, local executive bodies are provided with “poor” information that does not allow for full implementation of changes in close correlation with the policy of the Central authorized bodies. Therefore, these Guidelines should become a reference book for employees of pilot bodies in matters of modernization of activities.

Second. The analysis established the need to take into account the moral and psychological climate within each organization during a period of large-scale structural changes (the “Organization” factor).

Therefore, HR services of state bodies are recommended to develop approaches not only for hiring staff (on-boarding), but also for the processes of reassignment and dismissal (off-boarding). This will help to balance the risks of “personnel starvation” and improve the image of the civil service overall.

Thus, when on-boarding a candidate with certain knowledge and competencies, it is necessary to predict the further trajectory of their career development (usually changes occur every 3-4 years) in the organization and the necessary measures to improve their skills, training, rotation, etc. You should also determine the time period when an employee will be set to leave the organization due to lack of further career growth, expansion of expertise, and other aspects. In this case, each HR specialist should have a set of tools for “parting” with the employee (off-boarding). Predicting these aspects at the initial stage of accepting a candidate will reduce the negative effect on both the system and the employee. This entire life cycle should be accompanied by a system for evaluating the effectiveness of personnel and appropriate decisions on training, promotion, rotation, and dismissal.

In general, such work should become part of the corporate culture of each state body. Therefore, the Agency for Civil Service Affairs is invited to make the necessary amendments to the Law “On Civil Service of the Republic of Kazakhstan”. In particular, article 1 of this Law should be supplemented with the definitions “organizational culture” and “individual development plan of a civil servant”, and Chapter 5 should be supplemented with articles detailing the procedure for applying the above-mentioned innovations in the practice of state bodies.

There are many definitions of organizational culture. The author proposes to understand it as a set of values and standards that determine the behavior of the organization. In turn, the individual employee development plan contains a forecast of the career path of the specialist, as well as the skills and competencies necessary for this, with a description of the type of training program or advanced training courses. At the same time, it is proposed to keep the target performance indicators in the current annual individual work plans of employees, based on the results of which decisions are made on the payment of bonuses and other personnel decisions.

Third. The issue of feedback and accountability of public authorities remains relevant. Often, in the pursuit of internal innovations, the main stakeholders are forgotten. Therefore, reports on the quality of public services and interaction with the population should be developed to improve the effectiveness of activities (searching for “bottlenecks” based on the analysis of complaints and violations, recommendations of respondents).

In general, the gradual introduction of a new remuneration system is possible under certain conditions, such as:

- reducing the budget burden with a focus on finding internal reserves (digitalization, shared service centers, optimization of the structure and managerial positions, project management, etc.);
- correspondence with organizational transformation and initiatives;
- analysis of the harmony of the positions hierarchy (the ratio of managerial and executive links);

- measuring employee feedback and taking into account their suggestions;

- surveys of the population in order to improve the performance, etc.

Together, these recommendations will improve the effectiveness of the project. At the same time, for a complete picture, the author provides a similar analysis for the remaining pilot bodies in the framework of the dissertation research.

The author hopes that these proposals and results of the analysis will be of interest to a wide range of readers who study the issues of accountability of the state apparatus, transformation, and modernization of the civil service system.

In practical terms, the results are proposed for the Audit report on the project of a new remuneration system for civil servants, conducted by the Korn Ferry Hay Group company (project developer) for the Agency for Civil Service Affairs of Kazakhstan (beneficiary).

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BOARD STRUCTURE AND FINANCIAL REPORTING QUALITY OF NIGERIAN LISTED DEPOSIT MONEY BANKS

Corporate governance is a theory in which management supervision facilitates the decision-making process, both in public and private organizations. The study investigated the outcome of board characteristics such as the board size and board composition, audit committee size, leverage, and firm size on earnings management (financial reporting quality) in listed deposit money banks in Nigeria from 1999 to 2018. The study employed a panel regression technique to analyse the relationship between financial reporting quality and board structure. Also, to determine the appropriateness of the estimation technique to adopt Hausman tests was carried out. For the determination of earnings management and to separate nondiscretionary accrual (NDAC) constituents from the total accruals (TA) to arrive at discretionary accrual (DAC) components, the studies of the Jones model (1991), as modified by Dechow and Sloan (1995) used. The Hausman test result revealed that Random Effect was the most appropriate estimator, in line with the null hypothesis. It was confirmed by the Breusch-Pagan Lagrangian multiplier, while the Breusch-Pagan/Cook-Weisberg test confirmed no heteroskedasticity. Panel regression results showed that (board size and board composition) has a significant positive impact on financial reporting quality. However, audit committee size and Leverage have positive but insignificant relation. Besides, firm size has a significant adverse effect on the dependent variable. In contrast, Leverage has a positive but no impact on the financial reporting quality of deposit money banks in Nigeria. The inferences are that board size, board composition, n, and firm size are significant variables influencing Nigeria's financial reporting quality. Therefore, the study recommends that banks and regulatory authorities check the excessive acquisition of assets and numerical increase in audit committee members to enhance commercial banks' financial reporting quality in Nigeria.

Key words: Board characteristics, Financial Reporting Quality, Deposit Money Banks.

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Нигериядағы депозиттік банктердің басқарма құрылымы және қаржылық есептілік сапасы

Корпоративті басқару – бұл мемлекеттік және жеке ұйымдарда шешім қабылдауды жеңілдететін басқаруды қадағалау теориясы. Зерттеу барысында 1999-2018 жылдар аралығында Нигериядағы депозиттік банктердегі басқарма құрамы, саны, аудиторлық комитет, левередж және фирма мөлшері сияқты басқарма сипаттамаларының кірістерді басқаруға (қаржылық есептіліктің сапасы) әсері зерттелді. Қаржылық есептіліктің сапасы мен директорлар кеңесінің құрылымы арасындағы байланысты талдау үшін панельдік регрессия әдісі қолданылды. Сондай-ақ, бағалау әдіснамасының сәйкестігін анықтау үшін Хаусман тесті өткізілді. Кірістерді басқаруды анықтау және дискрециялық емес есептеу компоненттерін (NDAC) жалпы есептелімдерден бөлу (TA) дискрециялық есептеу компоненттерін (DAC) алу үшін Jones (1991) және Dechow және Sloan (1995) модельдері бойынша жүргізілді. Хаусман тестінің нәтижесі кездейсоқ эффект моделі нөлдік гипотеза бойынша ең қолайлы екенін көрсетті. Мұны Брейш-Паганның Лагранж мультипликаторы растады, ал Брейш-Паган / Кук-Вайсберг сынағы гетероскедастиканың жоқ екенін көрсетті. Панельдік регрессияның нәтижелері көрсеткендей, директорлар кеңесінің құрамы мен саны қаржылық есептіліктің сапасына айтарлықтай оң әсер етеді. Алайда, аудиторлық комиссияның құрамы мен левередждің аз болса да, оң әсері бар. Сонымен қатар, фирма мөлшері тәуелді айнымалыға айтарлықтай жағымсыз әсер етеді. Керісінше, левередж Нигериядағы депозиттік банктердің қаржылық есептілігінің сапасына жағымды, бірақ шамалы әсер етеді. Директорлар кеңесінің саны, директорлар кеңесінің құрамы және фирманың мөлшері Нигериядағы қаржылық есептіліктің сапасына әсер ететін маңызды айнымалылар болып табылады деген қорытындыға келді. Осылайша, зерттеу банктер мен реттеуші органдарға Нигериядағы коммерциялық

банктердің қаржылық есептілігінің сапасын жақсарту үшін аудиторлық комитеттегі артық активтерді сатып алу мен мүшелер санын арттыруды ұсынды.

Түйін сөздер: басқарманың сипаттамасы, қаржылық есептіліктің сапасы, депозиттік банктер.

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Структура правления и качество финансовой отчетности Нигерийских депозитных банков

Корпоративное управление – это теория, согласно которой надзор со стороны руководства облегчает процесс принятия решений как в государственных, так и в частных организациях. В исследовании изучалось влияние таких характеристик совета директоров, как размер и состав совета директоров, размер комитета по аудиту, леввередж и размер фирмы, на управление доходами (качество финансовой отчетности) в перечисленных депозитных банках в Нигерии с 1999 по 2018 год. Использовался метод панельной регрессии для анализа взаимосвязи между качеством финансовой отчетности и структурой совета директоров. Также для определения пригодности методики оценки был проведен тест Хаусмана. Для определения управления доходами и отделения недискреционных составляющих начисления (NDAC) от общих начислений (TA) с целью получения компонентов дискреционного начисления (DAC) были проведены исследования модели Jones (1991) и модифицированной Dechow и Sloan (1995). Результат теста Хаусмана показал, что модель со случайными эффектами была наиболее подходящей оценкой в соответствии с нулевой гипотезой. Это было подтверждено лагранжевым множителем Бреуша-Пагана, в то время как тест Бреуша-Пагана / Кука-Вайсберга не подтвердил гетероскедастичности. Результаты панельной регрессии показали, что размер и состав совета директоров оказывает значительное положительное влияние на качество финансовой отчетности. Тем не менее, размер комитета по аудиту и леввередж имеют положительную, но незначительную связь. Кроме того, размер фирмы оказывает значительное отрицательное влияние на зависимую переменную. Напротив, леввередж положительно, но незначительно влияет на качество финансовой отчетности банков депозитных денег в Нигерии. Сделаны выводы о том, что размер совета директоров, состав совета директоров и размер фирмы являются важными переменными, влияющими на качество финансовой отчетности в Нигерии. Таким образом, исследование рекомендует банкам и регулирующим органам контролировать чрезмерное приобретение активов и численное увеличение числа членов аудиторского комитета для повышения качества финансовой отчетности коммерческих банков в Нигерии.

Ключевые слова: характеристики правления, качество финансовой отчетности, депозитные банки.

Introduction

The subject of financial reporting quality/earnings management and corporate governance mechanisms has received considerable attention in recent years from academics, professionals, market participants, and regulators. Financial reporting's focus continues due to recent corporate failures that made stakeholders lose credibility and reliability in financial reports. Financial reporting quality provides transparent and genuine financial dealings design to communicate the accurate picture of corporate organisations to stakeholders to rate corporate organisations' trend performance. On the other hand, corporate governance is a concept where management supervision occurs in the decision-making process, both in public and private organizations. In the decision-making process, corporate governance must be implemented, as one of its requirements for an ef-

fective firm and sound organizational management (Nugroho and Eko, 2011)

Syakhroza (2004) claimed that the leadership (board of commissioners and board of directors) excellence contributes a significant role in executing corporate governance code. The board of commissioners representing the Nigeria Security and Exchange Commission in Nigeria acts as the company supervisor/regulatory authority, while the board of directors is responsible for its management. Both boards of commissioners and the board of directors have the full obligation and power to decide how to direct, control, and supervise the management of resources following the business's goals. Above notwithstanding, a conflict of interest often arises between them. Although the board of commissioners, as the dispenser of authority, has a stronger legal position than the board of directors, it also has less access to its situation. All the same, a skirmish of

interest often occurs between the duo. However, as the regulatory authority, the board of commissioners has a sturdier legal position than the board of directors. Still, it has less access to the information on its state of affairs (Syakhroza 2004). One of the solutions that can be used to checkmate the directors' wrongdoings is to use financial reports to measure their performance.

Nonetheless, through precise techniques, the board of directors frequently manipulates the financial statement during footage of the firm's book-keeping undertakings. Accounting, earnings management is not a damaging drill because it is anchored on the trust that the board of directors should present an excellent financial report with good records at all times. Little or no earnings management implies truthful information in financial reporting (Syakhroza 2004).

Globally, Al-Shaer et al. (2017) argued that false representation in published accounts causes loss of integrity, quality, and confidence in financial reporting. They cited the ones involving Enron and Worldcom in the US. In Nigeria, Eriabie and Izedonmi (2016) and Moses (2019) stressed that Cadbury Plc., Afribank Plc, and Intercontinental Bank Plc were involved extensively in fraud falsification of contents in their financial statements. Similarly, CBN (2019) observed that the collapse of Skye bank Plc. in 2018 and the absorption of Diamond Bank by Access Bank in 2019 resulted from poor financial reporting of the affected banks. To forestall the financial statement fraud crisis, organisations take a wide range of actions. These include setting up committees. Such committees' roles include watching closely the contents of financial reports from compilation to publication and beyond. A considerable debate in recent times shows the need for strong corporate governance and sound financial reporting quality (Moses, 2016; Kusnadi et al., 2016; Umobong and Ibanichuka, 2017; Al-Shaer et al., 2017). This has made countries worldwide draw up guidelines and codes of practices to strengthen corporate governance and enhance sound financial reporting quality (Cadbury 1992; Corporate Governance Code of Nigeria, 2003; 2007; 2014).

Good company governance by boards of directors and audit committees is recognised to influence financial reporting quality. Quality reporting, in turn, impacts the adverse effects of earnings management. As a result, there has remained a concentrated effort to enhance the board of directors' independence, minimize board size, and audit committee in Nigeria (Blue Ribbon Committee, 1999; Corporate Governance Code of Nigeria, 2014). Thus, ques-

tions continue to be raised about audit committees' efficiency and board characteristics, especially in the Nigerian banking industry. Furthermore, board characteristics; including structure, composition, independence, and experience, also determine the extent of financial reporting quality

Despite the Central Bank of Nigeria's continuous effort and other regulatory agents to prevent banks in Nigeria from rendering low earnings management reports, bank managers persist in indulging in excessive discretionary accruals approvals. CBN (2019) noted these lapses of the managers in the recent collapse of Skye Bank, which was later acquired by Polaris Bank in 2018, and the merger of Diamond Bank and Access Bank in 2019, respectively

Consequently, this study examines the effect of board characteristics on financial reporting quality. The study focused on some selected quoted Deposit Money Banks in Nigeria. The study specifically seeks to:

- examine the effect of board size (number of (executive and non-executive) directors) on financial reporting quality of selected quoted Deposit Money Banks in Nigeria;
- investigate the Impact of board composition (outside directors /internal directors) on financial reporting quality of s Deposit Money Banks in Nigeria;
- examine the effect of audit committee size on financial reporting quality of selected quoted Deposit Money Banks in Nigeria;
- investigate the correlation between the firm size and financial reporting quality of banks in Nigeria;
- examine the association between Leverage and financial reporting quality of banks in Nigeria.

Based on the objectives of the study, hypotheses were stated in the null form as follows:

Hypothesis 1: There is no statistically significant association between board size and financial reporting quality of selected quoted Deposit Money Banks in Nigeria.

Hypothesis 2: There is no significant correlation between board composition and financial reporting quality of set quoted Deposit Money Banks in Nigeria.

Hypothesis 3: There is no significant association between audit committee size and financial reporting quality of selected cited Deposit Money Banks in Nigeria.

Earlier studies on the relationship between board characteristics and financial reporting quality in both developed and emerging economies showed

no nexus between the two variables; hence this paper intends to shed more light on the two variables using the Nigerian experience. The study focuses on banks with financial statements between 1999 and 2018 and has their names registered Nigerian Security Exchange. The years covered makes this study to have more data point than previous studies in Nigeria.

A vast majority of prior studies on the effects of board characteristics on financial reporting quality are more in developed countries. Similar studies noted in developing economies, include Okeahalam (2004) and Moses (2019), are few in Nigeria. This study's findings will help financial regulators, economists, investors, academics, politicians, and other stakeholders. The knowledge gap to be observed by this study will assist the interested parties to understand the import of good corporate governance in enhancing earnings management. The rest of this paper is organised as follows: the next section discusses conceptual review, followed by an appraisal of past studies, followed by the expected associations between corporate governance characteristics and earnings management. Next, the research method and data collecting process are described, followed by a discussion of the empirical results. The paper concludes with a recommendation.

Literature Review

Some theoretical offers deal with board characteristics and financial reporting quality grounded in agency theory (Jensen and Meckling, 1976). The approach, also known as the Principal-Agent problem, refers to the variety of ways in which agents, linked by contractual arrangements with a firm, and how it influences its behaviour. These may include organisational and capital structure, remuneration policies, accounting techniques, and attitudes toward risk-taking. Agency costs are the total cost of administering and enforcing these arrangements

Agency theory explains how best to organise relationships in which one party (the principal) determines the work, which another party (the agent) undertakes (Eisenhardt, 1989). The theory contends that under circumstances of partial information and doubt, which characterise most firm's sceneries, two agency hitches arise: adverse selection and moral danger. The adverse assortment is the condition under which the principal cannot ascertain if the agent accurately represents his ability to do the work for the payment he received. Moral hazard is the condition under which the principal cannot be sure if

the agent has put forth maximal effort (Eisenhardt, 1989).

Adverse selection and moral hazard problems mean that fixed-wage contracts are not always optimal for organizing linkage amid principal and agent (Jensen and Meckling, 1976). A fixed wage might create an inducement for the agent to evade since his reward will be the same, notwithstanding the quality of his work or his effort level (Eisenhardt, 1989). When agents have the incentive to elude, it is often more efficient to replace fixed wages with compensation based on residual claimant on the firm's profits. The provision of possession rights reduces the incentive for agents & adverse selection and moral hazard since it makes their compensation dependent on their performance (Jensen, 1983).

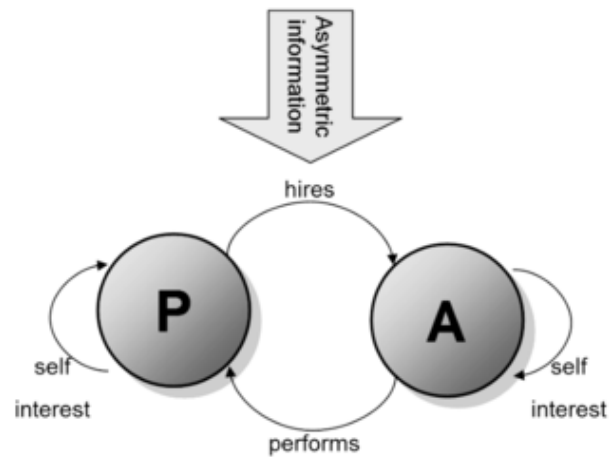


Figure 1 – Basic idea of Agency Theory
Source: Eisenhardt, 1989

Figure 1 the principal-agent problem treats the difficulties that arise under conditions of incomplete and asymmetric information. To align the agent's interests with those of the principal various techniques may be used, such as piece rates/commissions, profit sharing, efficiency wages, the agent posting a bond, or fear of firing (Eisenhardt, 1989).

In its application to financial economics, agency theory looks at conflicts of interest between people with different stakeholders in the same assets. It is the most important means of the disputes between Shareholders and managers of companies and shareholders and bondholders.

One particular important agency issue is the conflict between the interests of shareholders and debt holders. Similarly, following a riskier but higher return tactical benefits of the shareholders to the

detriment of the debt holder who earns a static profit (Gbadebo, 2017).

Another form of agency theory is the Multi-Task Principal-Agent Model propounded by Holmstrom et al. (2012), where the agent needs to perform separate and distinct actions to fulfill multiple objectives, an improvement on the traditional agency theory. They claimed that incentives provided to agents and employees are far more complicated than it is represented in the standard principal-agent model. The performance measures that determine rewards may total ratted aspects of performance into a single number and omit another element of performance that is essential if the firm is to achieve its goals (Holmstrom et al., 2012)

The multi-task Principal-Agent theory propounded utilises a linear principal-agent model that ensures that an increase in an agent's compensation in any one task will cause some re-allocation of attention away from other jobs. (Holmstrom et al., 2012)

The theory indicates that even when the agents have identical ex-ante characteristics, the principal should still design their jobs to measure distinctiveness that differs as widely as possible. The problem is how to inspire managers to eject the money rather than investing it at a lesser amount of the cost of capital or wasting it on organisational inefficiencies (Jensen, 1986).

This version premises on the supposition that managers have incentives to cause their firms to grow beyond the optimal size since this raise their power and reward. It, therefore, tries to identify firms' activities that are likely to reduce the agency costs associated with free cash flow.

To reduce the agency costs, debt is proposed to free cash flow by decreasing the cash flow accessible for spending at managers' freedom of choice. Therefore, the danger caused by failure to service the debt serves as a sufficient, inspiring force to make organisations more efficient (Jensen, 1986).

Audit Committee size and financial reporting quality

Moses (2019) investigated the relationship between audit committee size and the quality of commercial banks' financial reports in Nigeria. The study data was collected from the annual reports of 15 commercial banks, using content analyses. The study covered an era of 10 years from 2009 to 2018. The research findings showed that the audit committee composed more independent members has a positive effect on financial reporting quality.

Also, Onyabe et al. (2018) examined the effect of the audit committee meeting and expertise on the

financial reporting quality of commercial banks in Nigeria. They got data from the NSE fact-books and fifteen commercial banks' financial statements over ten years from 2007-2016. The study adopted the modified Jones (1991) model to measure financial reporting quality. The study's findings showed that the audit committee meeting had a positive but statistically insignificant effect on financial reporting quality. They also found that audit committee expertise negatively affected the banks' financial reporting quality. Moreover, studies like that of Al-Shaer et al. (2017) and Eriabie et al. (2016), Eyenubo et al. (2017) showed a significant positive link between the audit committees size and financial reporting quality. Contrary to this are Kipkoech and Rono (2016), Moses et al. (2016), who observed a negative association between dependent and independent variables

Board composition

Moses (2019) investigated the relationship between the board of board composition and the quality of commercial banks' financial reports in Nigeria. The study data was collected from the annual reports of 15 commercial banks, using content analyses. The study covered a period of 10 years from 2009 to 2018. The findings showed that board composition has a significant positive relationship with the quality of financial reports. Adebisi (2017) and Ibrahim et al. (2018) examined the link between board composition and financial reporting quality among Nigeria's deposit money banks. Their studies employed the panel regression method of analysis proxied discretionary accrual for financial reporting quality. These studies' findings revealed that board size and board independence positively affect financial reporting quality.

On the other hand, Ibrahim and Jehu (2018) found that the proportions of non-executive directors and the independent non-executive directors have a negative and significant relation with abnormal accruals. They found that a higher ratio of non-executive directors on the board improves the quality of financial reporting. However, the board size was not statistically significant.

Furthermore, some studies show evidence of a negative relation between the proportion of independent directors and earnings management (Ibrahim and Jehu, 2018; Klein, 2002; Osmo and Noguer, 2007; Xie et al., 2003). On the contrary, Jamaludina et al. (2015), Dimitropoulos and Asteriou (2010) showed that outside directors (independent directors) have a positive nexus with annual accounting earnings. Some others indicate no correlation between earnings management and

board independence (Bradbury et al., 2006; Park and Shin, 2004).

Board size and financial reporting quality

Moses (2019) examined the relationship between board size and the quality of commercial banks' financial reports in Nigeria. The study data was collected from the annual reports of 15 commercial banks, using the method of contents analyses. The study covered an epoch of 10 years from 2009 to 2018. The findings revealed that the board of directors' numerical size showed a positive relationship with the quality of financial reports. Other studies that explicitly examined the relationship between board size and FRQ are found to be in three-fold: inverse relationship (Luo and Jeyaraj, 2019; Soliman and Ragab, 2013; Abed et al., 2012; Anderson et al., 2004; Xie et al., 2003), positive correlation (Talbi et al., 2015; Alzoubi, 2014; Chekili, 2012; Beasley, 1996), and no association (Abbott et al., 2004; Maria and Alves, 2011).

Firm size and financial reporting quality

Shehu and Ahmad (2013) observed that firm size has a significant effect on earnings quality. The study argued that large manufacturing firms in Nigeria tend to report more reliable and qualitative information in their financial report than small ones. However, Huang et al. (2012) firm size and financial reporting quality, using firm's assets to analyse earnings forecasts and financial statements as a proxy for financial reporting quality, a sample of 3,413 Compustat firms for a period 2005 to 2008. They employed regression analysis. They found that firm size is significant and negatively related to financial reporting quality. However, Olowokure et al. (2016), who investigated the correlation between firm size and financial reporting quality among Ni-

gerian Banks from 2005 to 2014, found no statistically significant relationship between the dependent and independent variables.

Leverage and financial reporting quality

Most prior studies have indicated that there is no significant relationship between Leverage and the level of disclosure (Wallace et al., 1994; Ahmed and Nicholls, 1994; Wallace and Naser, 1995; Camfferman and Cooke, 2002; Ali et al., 2004; Al Saeed, 2006). However, Naser et al. (2002) found a significant positive relationship between Leverage and disclosure level.

Methodology

The study sought to statistically examine the relationship between Deposit Money Banks' financial reporting quality and board characteristics in Nigeria. The population of the study consists of 24 banks, categorised (8 international authorization, 11 national approval, 3 regional authorisation, and 2 Non-interest banks). The study purposefully selected 16 deposit money banks with financial statements for the period under examination (1999-2018) and are currently on the Nigerian Stock Exchange Daily Official listing. The study is based on three corporate governance mechanisms (board size, board composition, and audit committee), and financial reporting quality proxied by discretionary accrual. Besides, the control variables employed are firm size and Leverage. Panel data technique was used, which from all indications, best suits random effect that deals with the methodology of modelling, non-stationary, and variables. The method enables estimating efficiency to show the long-run relationship between a dependent variable and independent variables.

Table 1 – Variables measurements and Sources

Variables	Measurements	Sources	Supporting Scholars
Financial Reporting Quality (FRQ)	Discretionary Accruals which implies Total Accrual less Nondiscretionary Accrual	Nigeria Stock Exchange (NSE) Factbooks and Annual Financial Statements (AFS) of selected banks	Dechow, Sloan, and Sweeney (<i>called modified Jones Model, 1995</i>)
Board size (BS)	Number of directors on board, both the executive and non-executive	NSE Factbooks and AFS of selected banks various issues	Hillman, 2010; Zahra and Pearce, 2018
Board Composition (BC)	The ratio of outside directors to internal directors	NSE Factbooks and AFS of selected banks various issues	Baysinger and Butler, 2015; Baysinger and Hoskinsson, 2016; Fama and Jensen, 1983
Audit Committee Size (ACS)	Number of Audit Committee members	NSE Factbooks and AFS of selected banks various issues	Ayinde, 2002; Moses, 2019

Continuation of table 1

Variables	Measurements	Sources	Supporting Scholars
Firms Size (FS)	Log of Total Asset	NSE Factbooks and AFS of selected banks various issues	Oladele and Olagunju, 2013; Niresh and Thirunavukkarasu, 2014
Leverage (L)	The ratio of Debt to Equity	NSE Factbooks and AFS of selected banks various issues	Alkhatib, 2012; Omondi and Muturi, 2013; Njeri and Kagiri, 2013; Nwanna and Ivie, 2017
Note – compiled by the author			

The Jones Model

Jones (1991) proposes a model that relaxes the assumption that nondiscretionary accruals are constant. Her model attempts to control for the effect of changes in a firm's economic circumstances on nondiscretionary accruals. The Jones Model for nondiscretionary accruals in the event year is:

$$NDA_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV_t) + \alpha_3 (PPE_t) \quad (1)$$

where:

(ΔREV_t) = incomes in year t fewer revenues in year t-1 scaled by total assets at t-1;

PPE_t = gross property plant and equipment in year t scaled by total assets at t-1;

A_{t-1} = total asset at t-1; and

$\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters.

Estimates of the firm-specific parameters, $\alpha_1, \alpha_2,$ and α_3 using the following model in the estimation period are generated as:

$$TA_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV_t) + \alpha_3 (PPE_t) + \alpha_4 \quad (2)$$

The Modified Jones Model

To eliminate the Jones Model's conjectured tendency to measure discretionary accruals, the modification, is designed with an error when discretion is over revenues. In the modified model, nondiscretionary accruals during the event period (i.e.), during periods in which earnings management estimated is hypothesised) as:

$$NDA_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV_t - \Delta REC_t) + \alpha_3 (PPE_t), \quad (3)$$

where:

ΔREC_t = net receivables in year t less net receivables in year t-1 scaled by total assets at t-1. The estimates of $\alpha_1, \alpha_2, \alpha_3,$ and nondiscretionary accruals during the estimation period (in which no systematic earnings, management is hypothesized) are obtained from the original Jones Model. The

only adjustment relative to the original Jones Model is that the change in revenues for the change in receivables is adjusted in the event period (Dechow et al., 1995).

The novel Jones Model implicitly undertakes that freedom of choice over revenue in either the estimation or the event period is not exercised. The modified version of the Jones Model implicitly assumes that all credit sales changes in the event period result from earning management. On the reasoning that it is easier to manage earnings by exercising discretion over the recognition of revenue on credit sales than to manage earning by exercising discretion over revenue recognition on cash sales. If this modification is successful, then the estimated earnings management should no longer be biased toward zero in samples where earnings management has taken place by managing revenues (Dechow et al., 1995).

Model Specification

The analytical model considered in this study is adapted from Moses (2019)

$$FRQUAL = \beta_0 + \beta_1 ACS + \beta_2 BS + \beta_3 BODCOM + \beta_4 BNKSIZE + \beta_5 BNKAGE + \mu \quad (4)$$

where:

FRQUAL denotes financial reporting quality, AUDCOM connotes Audit composition, BODSIZE implies Board size, BODCOM indicates Board composition, and BNKSIZE means bank size.

Leverage is included as one of the control variables as it shows the extent to which firms borrow (debt financing) to increase profitability. The Leverage as a financial decision is a critical managerial decision as it influences the firm's market value, shareholder's risk, and returns (Omondi & Muturi, 2013). Besides, the three determinants of Leverage of a firm are firm size, tangibility, and growth (Nwanna et al., 2017). To replace firms' size, which is one of the Leverage's components in the adopt-

ed model to enhance the robustness of the result of findings.

This study’s model took the elements of board size, board composition, and audit committee size as predictor variables. Simultaneously, financial reporting quality or earnings management, measured by discretionary accruals, is used as the criterion variable. The study specified model attempts to ascertain the influence of board characteristics on the quality of financial reporting of quoted banks in Nigeria as follows:

$$FRQ_{it} = f(BS, BC, ACS, FS, L) \quad (5)$$

$$FRQ_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BC_{it} + \beta_3 ACS_{it} + \beta_4 FS_{it} + \beta_5 L_{it} + \varepsilon_{it} \quad (6)$$

where:

FRQ_{it} = financial reporting quality (measured by discretionary accruals)

β₀ = Intercept

β₁ – β₅ = Coefficient of predictor variables

BS_{it} = Board Size of the firm I in year t

BC_{it} = Board Composition of firm i in year t

ACS_{it} = Audit Committee Size of firm i in year t

FS_{it} = Firm size of firm i in year t

L_{it} = Leverage of firm i in year t

ε_{it} = Disturbance term of firm i in year t

Based on extant literature review, the *a priori* expectations for the study variables are; β₁, β₂, β₃, β₅ > 0; β₄ < 0

Results and Discussion

Diagnostic test

Table 2 below shows the diagnostic test, which assists in determining the estimation technique that is most appropriate using the Hausman test and Breusch-Pagan LM Test. The Hausman test is the test to choose between the Fixed and Random Effects models, while to test the random-effects model’s appropriateness the Breusch-Pagan LM test was used. Other diagnostics include the Breusch-Pagan/Cook-Weisberg heteroskedasticity test and the Wooldridge autocorrelation test. The classical linear regression model assumptions have it that the disturbances are homoskedacity that has no serial correlation.. To verify the correctness of the assumptions used the Breusch-Pagan/Cook-Weisberg, heteroskedasticity, and the Wooldridge autocorrelation tests were adopted.

Table 2 contained summary of diagnostic tests.. The Table shows that the Hausman test was conducted to determine the most appropriate meth-

od between the Fixed Effects and Random Effects model. As shown in Table 2, the results disclosed a ρ-value of 0.104, more than the 5 percent (0.05) level of significance chosen for the study. The results reveal that the Random Effect is the most appropriate estimator in line with the Hausman test’s null hypothesis, which states that there is an un-systematic difference in both models’ model coefficients. Thus, the study does accept the null hypothesis.

Table 2 – Diagnostic test

Hausman Test: Chi ² = 5.70, Prob> chi ² = 0.104
Breusch-Pagan LM Test: Chi ² ₍₁₎ = 1.55, Prob> chi ² = 0.030
Breusch-Pagan/ Cook-Weisberg Test: Chi ² ₍₁₎ = 1.23, Prob> chi ² = 0.24
Wooldridge Test: F = 1.85, Prob >F = 0.13
Note – compiled by the author

The Hausman specific test indicator favours, random effect model, because all the selected quoted deposit money banks are different from one another. Hausman’s selection of random effect model clarifies that the random effect is covering the heterogeneity among the quoted banks in the banking sector in Nigeria. Similarly, the confirmation test results on the Hausman results, using Breusch-Pagan Lagrangian multiplier with ρ-value of 0.03, were less than the acceptable level of significance of 5% supported. The outcome of the Hausman test concludes that Random Effect is the most appropriate estimator.

Also, the Breusch-Pagan/Cook-Weisberg test was conducted to establish Heteroskedasticity, that is, testing for the consistency of the variations in the residuals of the model period “t.” The result has a ρ-values of 0.24, which was more significant than the 5 percent chosen level of significance. It implies that the differences in error terms of the model are trending. The result means that the model is homoscedastic. It also suggests that there is no heteroskedasticity problem.

Similarly, Wooldridge Test was computed to know if the model’s coefficients and its residuals correlated over time. The test outcome revealed a ρ-value of 0.13, which is greater than the chosen level of significance of 5%. It showed that there is no first-order autocorrelation. It implies that there is no correlation problem among coefficients of the models and their residuals.

Table 3 below presents the regression results (ordinary least square (OLS) estimation, fixed effects (FE) estimation, and random effect (RE) estimation to determine the effect of board characteristics on financial reporting quality.

From the three estimations, the random effect result shows an overall R-square of 0.71. It implies that just 71% variation in the DAC represents explanatory variables' combined influence (BS, BC, ACS, FS, LG). Simultaneously, the re-

maining 29 percent caused by other determining variables outside the scope of this study. It was considering the result of the Wald $\chi^2_{(5)} = 31.98$, with a p-value of 0.00 (0 percent), which show that three out of the explanatory variables (BS, BC, and FS) significantly influence the financial reporting quality (Discretionary Accruals (DAC)). On the other hand, the other two explanatory variables (ACS and LEV) do not impact the dependent variable.

Table 3 – Regression result

Method	POOLED OLS			Fixed effects			Random effects		
Variables	Coeff	t-Stat	Prob.	Coeff	t-stat	Prob	Coeff	t-stat	Prob
BS	3.69	0.96	0.04	-0.05	-1.56	0.08	0.14	2.59	0.05
BC	5.24	3.47	0.90	0.29	2.92	0.01	0.42	3.49	0.04
ACS	0.18	3.55	0.03	0.06	6.65	0.02	0.05	5.84	0.41
FS	-0.23	-6.27	0.04	-0.04	-4.40	0.03	-0.06	-3.83	0.01
LG	0.76	1.31	0.12	0.22	1.01	0.24	0.02	1.32	0.63
Constant	40.44	3.16	0.00	5.02	3.16	0.87	0.009	-0.08	0.93
	Adj. R-squared = 0.76			Adj. R-squared = 0.68			Adj. R-squared = 0.71		
	F= 20.6			F= 25.88			Wald $\chi^2_{(5)} = 31.98$		
	Prob > F = 0.00*			Prob > F = 0.02*			Prob > $\chi^2 = 0.00*$		
Note – compiled by the author									

Board size (BS) has a significant positive relationship with financial reporting quality proxied by DAC at a 5% level of significance with a coefficient of 0.14, which implies an additional increase in board size will lead to a 14% rise DAC. Similarly, Board composition (BC) has a significant positive association with DAC at a 4% level of significance with a coefficient of 0.42, indicating that an increase in the number of non-executive directors of the board will lead to a 42% increase in DAC. On the other hand, firm size has a significant but negative influence on DAC with a coefficient of 0.06, which shows that an increase in firm size (total assets) will lead to the decline of financial reporting quality by 6%. However, Audit committee size (ACS) and Leverage (LEV) has a positive but insignificant correlation with DAC, which implies that an increase or decrease in ACS and LEV will not impact the dependent variable (Financial reporting quality).

This study observed a positive relationship between board size and financial reporting quality. The study specifies that an increase in board size will improve financial reporting quality; hence the null

hypothesis is rejected; The findings was supported by Adebisi (2017). He discovered a positive relationship between board size and financial reporting quality. On the other hand, Ibrahim and Jehu (2018) observed that board size has a non-statistical significance association with financial reporting quality.

Similarly, this research discovered a positive association between board composition and discretionary accruals. The discovery agrees with the apriori expectation. Therefore the null hypothesis is not accepted. This finding also conforms to Adebisi (2017), who found a positive relationship between the dependent and independent variables.

However, this research revealed a non-statistical relationship between audit committee size and financial reporting quality. This result was in line with that of Moses (2016). He found no significant linkage between audit reporting quality and audit committee size, contrary to the expectation of a significant positive association between the dependent and independent variables.

Meanwhile, other previous studies, such as Kipkoech and Rono (2016), listed firms in Kenya

and Eyenubo et al. (2017), who studied Nigerian quoted firms and observed a positive correlation between financial reporting quality and audit committee size.

Firm size showed a significant inverse association with discretionary accruals. This is supported by the study of Huang et al. (2012) studied CEO age, and financial reporting quality found that firm size is significant and negatively related to financial reporting quality, which conforms with a priori expectation.

On the contrary, Shehu and Ahmad (2013) observed a significant positive relationship between firm size and earnings quality. Olowokure et al. (2016) found no statistically meaningful relationship between a dependent variable and independent variables. Finally, Leverage has a positive but insignificant relation to financial reporting quality. This result is in line with the studies of (Wallace et al., 1994; Ahmed and Nicholls, 1994; Wallace & Naser, 1995; Camfferman & Cooke, 2002; Ali et al., 2004; Al Saeed, 2006). However, Naser et al. (2002) found a significant relationship between Leverage and disclosure level.

Conclusion

Financial reporting quality has remained the focus of discussion for both financial and non-financial firms in both developed and emerging

economies. It has led to the collapse of both small and big companies worldwide. The potentially unresolved problem is the principal-agent conflict due to moral hazard and adverse selection. It has been established that the agent has more information than the principal, hence the agent may use it to cheat on the principal through the unethical use of discretionary accruals. The study used data collected from different banks' financial reports, and the Nigerian Security Exchange factbook various issues from 1990 to 2018. The mixed econometrics test run includes the Hausman Test, Breusch-Pagan LM Test, Breusch-Pagan/Cook-Weisberg Test, and Wooldridge Test and regression analysis. The result showed a positive, statistically significant influence between board size and board composition on financial reporting quality.

On the other hand, firm size revealed a negative statistically significant effect on financial reporting quality. In contrast, audit committee size and Leverage do not influence banks' financial reporting quality in Nigeria. The study examined how board structure influences Nigeria's financial reporting quality to proffer solutions to unethical discretionary accruals approvals by the managers. The study recommends that the directors of banks and regulatory authorities check the excessive acquisition of assets and numerical increase in audit committee members to enhance commercial banks' financial reporting quality in Nigeria.

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СЕЛЬСКОЕ НАСЕЛЕНИЕ КАЗАХСТАНА: ДЕМОГРАФИЯ, СТАТИСТИКА И ТRENДЫ

В статье рассмотрены проблемы обострения демографической ситуации в сельской местности, вызванные, с одной стороны, механическим оттоком трудоспособного населения и, с другой стороны, естественной убылью при снижении рождаемости и относительно невысокой продолжительности жизни. Между тем, в Казахстане принята государственная программа развития агропромышленного комплекса на 2017 – 2021 годы. Перед сельским хозяйством как ядром агропромышленного комплекса поставлены важные задачи по обеспечению физической и экономической доступности продуктов питания широким слоям населения, повышению эффективности использования природных ресурсов, развитию аграрной науки и трансферту технологий, внедрению цифровых технологий и повышению качества жизни сельского населения. Снижение демографического потенциала в сельской местности в будущем может отрицательно сказаться на темпах воспроизводства населения в целом, состоянии и даже деградации сельских территорий. Целью статьи является не только статистический анализ темпов воспроизводства сельского населения, изучение демографической ситуации в сельской местности, но и обоснование комплекса мер по предотвращению демографических угроз, решению проблемы продовольственной безопасности, устойчивому социально-экономическому развитию сельских территорий. Для достижения поставленной цели были использованы диалектический, исторический, статистико-экономический, сравнительный методы. Авторы выделяют трудовой потенциал сельских территорий в качестве основного фактора обеспечения конкурентоспособности сельского района, области, региона и страны в целом.

Ключевые слова: сельское население, демография, миграция, отток, трудовые ресурсы.

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Rural population of Kazakhstan: demographics, statistics and trends

The article considers the problems of aggravation of the demographic situation in rural areas, caused on the one hand by the mechanical outflow of the able-bodied population and, on the other hand, by natural decline in fertility and relatively short life expectancy. Meanwhile, Kazakhstan has adopted a state program for the development of the agro-industrial complex for 2017 – 2021 years. Agriculture, as the core of the agro-industrial complex, has important tasks to ensure the physical and economic accessibility of food to the general population, increase the efficiency of the use of natural resources, develop agricultural science and transfer of technologies, introduce digital technologies and improve the quality of life of the rural population. Declining demographic potential in rural areas in the future may adversely affect the rate of reproduction of the population as a whole, the state and even the degradation of rural areas. The purpose of the article is not only a statistical analysis of the rate of reproduction of the rural population, a study of the demographic situation in rural areas, but also the justification of a set of measures to prevent demographic threats, solve the problem of food security, and sustainable social and economic development of rural areas. To achieve the goal, dialectical, historical, statistical-economic, comparative methods were used. Authors allocate the labor capacity of rural territories as a major factor of ensuring competitiveness of the rural area, the region and the country in general.

Key words: rural population, demography, migration, outflow, labor resources.

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Қазақстанның ауыл халқы: демография, статистика және трендтер

Мақалада ауылдық жерлердегі демографиялық ахуалдың шиеленісуі, бір жағынан еңбекке қабілетті халықтың механикалық кетуі және екінші жағынан, бала туу азайған кезде табиғи кему және салыстырмалы түрде өмір сүру ұзақтығы жоғары болмауынан туындаған проблемалар қарастырылған. Сонымен қатар, Қазақстанда агроөнеркәсіптік кешенді дамытудың 2017-2021 жылдарға арналған мемлекеттік бағдарламасы қабылданды. Агроөнеркәсіптік кешеннің өзегі ретінде ауыл шаруашылығының алдына халықтың кең тобына тамақ өнімдерінің физикалық және экономикалық қолжетімділігін қамтамасыз ету, табиғи ресурстарды пайдалану тиімділігін арттыру, аграрлық ғылымды және технологиялар трансфертін дамыту, цифрлық технологияларды енгізу және ауыл халқының өмір сүру сапасын арттыру бойынша маңызды міндеттер қойылды. Келешекте ауылдық жерлерде демографиялық әлеуеттің төмендеуі жалпы халықтың өсіп-өну қарқынына, ауылдық аумақтардың жай-күйіне, тіпті тозуына теріс әсер етуі мүмкін. Мақаланың мақсаты ауыл халқының өсімін молайту қарқынын статистикалық талдау, ауылдық жерлердегі демографиялық жағдайды зерделеу ғана емес, сонымен қатар демографиялық қауіп-қатерлерді болдырмау, азық-түлік қауіпсіздігі проблемасын шешу, ауылдық аумақтарды тұрақты әлеуметтік-экономикалық дамыту жөніндегі шаралар кешенін негіздеу болып табылады. Қойылған мақсатқа қол жеткізу үшін диалектикалық, тарихи, статистикалық-экономикалық, салыстырмалы әдістер пайдаланылды. Авторлар ауылдық аумақтардың еңбек әлеуетін ауылдық ауданның, облыстың, өңірдің және жалпы елдің бәсекеге қабілеттілігін қамтамасыз етудің негізгі факторы ретінде бөліп көрсетеді.

Түйін сөздер: ауыл халқы, демография, көші-қон, кету, еңбек ресурстары.

Введение

Демографическое прогнозирование в жизни любого общества играет важную роль. Это обстоятельство объясняется тем, что человеческий фактор является основным, определяющим конкурентоспособность и перспективы развития страны. Без наличия квалифицированных трудовых ресурсов практически невозможно обеспечить национальную безопасность, решать насущные проблемы на макро- и микроуровне.

Научные исследования по демографической ситуации всегда отличались актуальностью. Государству важно было знать, какова будет численность населения через определенный промежуток времени, какие структурные сдвиги произойдут в половозрастной пирамиде, каким образом в условиях глобализации миграционные потоки скажутся на темпах воспроизводства населения.

На государственном уровне разрабатываются демографические прогнозы, что дает возможность выявить своевременно потенциальную потребность всех слоев населения в жизненно важных товарах и услугах, планировать строительство объектов социальной инфраструктуры, составить баланс трудовых ресурсов, проводить

демографическую и государственную семейную политику.

Методология

Предметом исследования является демографическая ситуация в сельской местности, которая нуждается в научных исследованиях. Проблемы формирования трудовых ресурсов села занимают центральное место в национальной экономике и носят дискуссионный характер.

Количественные и качественные показатели трудовых ресурсов в сельской местности складываются под влиянием целого ряда демографических, природных, экономических, политических, социальных, географических факторов.

В качестве методологической основы исследований использован диалектический метод, изучающий демографические процессы в постоянном развитии с учетом качественных и количественных изменений, причинной обусловленности. Историческим методом выявлены особенности демографического развития, государственная важность и значимость решения проблемы в разные периоды времени. Экономико-статистический метод позволяет проводить массовые наблюдения, построить динамические ряды, выявить закономерности развития, про-

вести анализ и обосновать демографические прогнозы. Метод сравнительного анализа дает возможность глубже понять причины оттока населения из сельских районов, демографического кризиса и депопуляции населения.

Обзор литературы

В Послании Президента Республики Казахстан Н.А. Назарбаева «Стратегия «Казахстан-2050»: новый политический курс состоявшегося государства» подчеркнуто, что с каждым днем обостряется глобальный демографический дисбаланс. Общемировой тренд – старение человечества. Низкая рождаемость и старение человечества во многих странах неизбежно провоцируют проблемы на рынке труда, в частности, нехватку трудовых ресурсов. Нарастающий демографический дисбаланс формирует новые миграционные волны и усиливает социальную напряженность по всему миру.

В настоящее время все страны сталкиваются с новыми глобальными вызовами, в частности с демографическим кризисом и депопуляцией, усилением миграционного давления. Об этом свидетельствуют исследования по демографическим проблемам в сельской местности в разных странах (Antipova & Fakeyeva, 2012:5; Voto, 2010: 2). Для успешного развития государства необходимо с научной точки зрения изучать демографические процессы, выявлять тренды, научиться предвидеть последствия, разрабатывать и реализовывать комплекс мер по предотвращению демографических угроз.

Актуальность исследований демографической ситуации в целом и в частности в сельской местности подчеркивается в трудах таких известных зарубежных и отечественных ученых, как Мусина С.Т., Хусаинова Ж.С., Вечкинзова Е.А., Бельгибаева А.С., Доскалиева Б.Б., Шуленбаева Ф.А., Бақтымбет А.С., Бақтымбет С.С., Симонов Г., Гуревич В., Симонов А., Булаев В.М., Горина К.В., Блинова Т.В., Лихачева Т.Н., Тулебаева А.М., Сальжанова З.А. и др.

Между уровнем социально-экономического развития страны и демографической ситуацией существует тесная взаимосвязь и взаимообусловленность. При ухудшении качества жизни населения возрастает интенсивность демографических потоков, люди покидают насиженные места в поисках более благоприятных условий для проживания. Уменьшение численности сельского населения сказывается непосредственно на объемах производства сельскохозяйственной

продукции, степени освоенности территории, решении проблемы продовольственной и экономической безопасности страны.

Следует отметить, что при административно-плановой экономике функционировали крупные колхозы и совхозы. Сельчане имели гарантированные доходы от участия в общественном производстве, выращивали на своих приусадебных участках жизненно важные для семьи продукты питания. Государство поддерживало объекты социальной инфраструктуры на селе, возводило дома культуры, медицинские пункты, детские дошкольные учреждения и школы, ремонтировало дороги, обеспечивало связь и заботилось о благоустройстве населенных пунктов.

При переходе к рынку колхозы и совхозы были ликвидированы. Производство переместилось в частный сектор. Возрос уровень безработицы, обострились социальные проблемы в сельской местности. Часть сельского населения была выключена из производственного процесса, что отрицательно сказалось на развитии сельского хозяйства (Симонов и др., 2013: 85).

Кризис аграрного сектора отразился на демографическом поведении сельских жителей, а главной реакцией на создавшуюся ситуацию стал нарастающий процесс депопуляции населения в регионе в резонансе со значительным оттоком из сельской местности. Снижение демографического потенциала, особенно в сельской местности, влечет за собой обострение социально-экономических рисков развития региона, что может повлечь возможное возникновение проблем с восполнением численности населения региона и трудовых ресурсов (Булаев и Горина, 2013: 95). В последние годы нарастает отрицательное сальдо внешней миграции – идет чистый отток из Казахстана (Mussina et al., 2020: 53).

Между тем, масштабное сокращение сельского населения, в том числе и трудоспособного, создает серьезные угрозы для развития сельских территорий, особенно при резком сокращении численности сельской молодежи, вступающей в трудоспособный возраст (Лихачева, 2016: 145). Если учесть, что в сельском хозяйстве все еще слабо механизированы и автоматизированы производственные процессы, то нехватка рабочих сил может парализовать деятельность сельскохозяйственных предприятий, особенно в периоды сезонных работ.

Важная роль сельских поселений в обеспечении продовольственной безопасности страны, освоении и удержании территорий, сохранении традиционной культуры актуализирует задачу

создания необходимых условий для устойчивого социально-демографического развития села (Блинова, 2018: 14). В сельской местности дети с ранних лет учатся ухаживать за животными и растениями, осваивают особенности деревенского образа жизни, учатся агробизнесу, получают воспитание в духе национальных традиций и обычаев.

Процессы урбанизации, ограничение числа детей в браке и переход от многодетности к малодетности, различия в культурно-бытовых условиях в городе и селе, внутренняя и внешняя миграция, безработица на селе явились основными причинами массового оттока сельского населения.

Так как миграционной активностью отличаются люди трудоспособного возраста, состав и структура сельского населения Казахстана претерпели изменения. Приходится констатировать тот факт, что дальнейшее сокращение численности сельчан может привести к дисбалансу трудовых ресурсов, к деградации и запустению сельских территорий.

В Казахстане демографические процессы на селе характеризуются, в первую очередь, сокращением численности сельского населения, что обусловлено, прежде всего, естественной его убылью и миграционным оттоком (Бельгибаева, 2017: 148).

Рынок труда испытывает сильнейшее воздействие со стороны демографических, экономических, технологических и политических трендов, что делает его уникальным в каждой стране. Это приводит к необходимости проведе-

ния его всестороннего анализа как на глобальном, так и на национальном уровнях (Tulebayeva & Salzhanova, 2019: 152).

Между тем, демографическое благополучие сельских районов в конечном итоге отражается на показателях воспроизводства населения, дисбалансе городского и сельского населения, численности трудовых ресурсов, решении проблемы национальной безопасности страны.

Вопросы регулирования потоков трудового населения являются важными в формировании устойчивого роста экономики стран. Качественный потенциал рынка труда является основным фактором создания конкурентоспособной экономики государств (Doskaliyeva et al., 2019: 265). Тем более, что складывающаяся демографическая ситуация в сельской местности может в дальнейшем вызвать негативные последствия в виде сокращения рабочей силы, снижения темпов роста ВВП и в целом повлиять непосредственным образом на обеспечение устойчивого развития страны.

Результаты и обсуждение

При переходе к рынку активизировались миграционные процессы, что повлекло за собой уменьшение численности населения Казахстана. Так, по данным таблицы 1 видно, что в 2000 году по сравнению с 1991 годом в стране стало проживать на 1586,1 тысяч человек меньше. Затем, наметилась очевидная тенденция увеличения численности населения и в 2019 году этот показатель составил 18631,8 тысяч человек.

Таблица 1 – Динамика численности городского и сельского населения Казахстана, тысяч человек (на конец года)

Показатели	1991	2000	2010	2015	2019
Все население	16451,7	14865,6	16442,0	17670,6	18631,8
В том числе					
Городское население	9404,0	8 413,4	8961,4	10066,6	10938,7
Сельское население	7047,7	6 452,2	7480,6	7604,0	7693,1
Доля городского населения, %	57,16	56,59	54,50	56,97	58,71
Доля сельского населения, %	42,84	43,41	45,50	43,03	41,29
Примечание – составлено авторами на основе данных Комитета по статистике Министерства национальной экономики Республики Казахстан					

Так, в 2019 году численность населения по сравнению с 1991 годом увеличилась на 13,2%, в том числе городского населения – на 16,3%,

сельского населения – на 9,1%. Темпы роста городского населения значительно опережают темпы роста сельского населения. В структур-

ном отношении на долю городского населения приходилось в 2019 году 58,71% и на долю сельского населения – 41,29%.

Таким образом, в Казахстане преобладает городское население. Выявилась тенденция уменьшения удельного веса сельского населения. Если в 1991 году доля сельского населения составляла 42,84%, то в 2019 году этот показатель уменьшился на 1,55%.

Как показывают данные таблицы 2, сельское население распределено по территории страны

неравномерно. Больше половины проживает в южном регионе, что можно объяснить более благоприятными условиями для проживания и занятия сельским хозяйством. Так, в Алматинской области численность сельчан составила в 2019 году 1 581 524 человека, или 20,55% от общей численности сельского населения, в Туркестанской области соответственно 1 594 568 человек, или 20,72%. На долю южного региона приходится 55,83% от общей численности сельского населения по стране.

Таблица 2 – Распределение сельского населения по областям Казахстана (на начало года)

Наименование областей	2010		2015		2019	
	человек	в %	человек	в %	человек	в %
Акмолинская	392799	5,31	389207	5,14	390318	5,07
Актюбинская	298223	4,03	311949	4,12	255145	3,31
Алматинская	1406029	19,01	1456133	19,21	1581524	20,55
Атырауская	274532	3,71	307065	4,05	303573	3,94
Западно-Казахстанская	320186	4,33	317648	4,19	313066	4,07
Жамбылская	625598	8,46	655799	8,65	678434	8,81
Карагандинская	298757	4,04	289936	3,83	281114	3,65
Костанайская	442123	5,98	421211	5,56	397114	5,16
Кызылординская	398637	5,39	428015	5,65	442315	5,75
Мангистауская	233808	3,16	338736	4,47	407145	5,29
Павлодарская	235632	3,19	225834	2,98	221824	2,88
Северо-Казахстанская	354748	4,80	328599	4,34	301844	3,92
Туркестанская*	1522924	20,59	1540662	20,32	1594568	20,72
Восточно-Казахстанская	593669	8,00	567896	7,49	529375	6,88
Всего	7397665	100,00	7578690	100,00	7697359	100,00

Примечания: 1) составлено авторами на основе данных Комитета по статистике Министерства национальной экономики Республики Казахстан
2) *данные за 2000 и 2015 годы по Южно-Казахстанской области

При более детальном изучении данных таблицы 2 заметно, что в южном регионе прослеживается четкая тенденция увеличения численности сельского населения. Так, в Алматинской области за период с 2010 по 2019 годы количество сельчан возросло на 12,5%, в Туркестанской области – на 4,7%, в Жамбылской области – на 8,4%, в Кызылординской области – на 10,9%. В совокупности по южному региону сельское население в 2019 году по сравнению с 2010 годом увеличилось на 8,6% и составило 4 296 841 человек.

В Атырауской области численность сельчан за анализируемый период времени возросла на

29 041 человека, в Мангистауской области – на 173 337 человек. Однако, в Восточно-Казахстанской области сельского населения стало меньше на 64 294 человека, в Западно-Казахстанской области – на 7 120 человек, в Акмолинской области – на 2 481 человека, в Актюбинской области – на 43 078 человек, Карагандинской области – на 17 643 человека, в Костанайской области – на 45 009 человек, в Павлодарской области – 13 808 человек, в Северо-Казахстанской области – на 52 904 человека. Таким образом, из 14 областей в восьми из них наблюдается очевидная тенденция уменьшения численности сельского населения.

Таблица 3 – Показатели воспроизводства сельского населения в Казахстане за 2010-2019 годы

Показатели	2010	2015	2016	2017	2018	2019
Число родившихся в сельской местности, человек	164530	172650	170963	161127	162785	162814
Число умерших (сельское население), человек	61743	53492	53230	52013	51276	51556
Естественный прирост сельского населения, человек	102787	119158	117733	109114	111509	111258
Прибыло в сельскую местность, человек	131364	138696	178662	346610	328824	430519
Выбыло из сельской местности, человек	161622	202225	262602	396662	390515	503934
Сальдо миграции (сельское население), человек	-30258	-63529	-83940	-50052	-61691	-73415
Численность сельского населения, человек (на начало года)	7397665	7578790	7634319	7586722	7647541	7697359
Численность сельского населения в возрасте 0-14 лет, человек (на начало года)	2037370	2200486	2245668	2264284	2308534	2346922
Численность сельского населения в возрасте 15-64 лет, человек (на начало года)	4895419	4903151	4895944	4895944	4819071	4812797
Численность сельского населения в возрасте 65+ лет, человек (на начало года)	464876	475053	492707	502631	519936	537640
Число браков сельского населения	58359	49842	47030	44529	41833	41274
Число разводов сельского населения	10563	13447	13277	13825	13675	15715
Ожидаемая продолжительность жизни сельского населения, лет	68,35	71,89	72,32	72,73	73,24	73,35
Примечание – составлено авторами на основе данных Комитета по статистике Министерства национальной экономики Республики Казахстан						

В таблице 3 приведены статистические данные, характеризующие темпы и особенности воспроизводства сельского населения в Казахстане. В 2019 году в сельскую местность прибыло 430 519 человек, выбыло из сельской местности 503 934 человека. Отсюда видно, что разница между количеством выбывших из сельской местности и прибывших в сельскую местность лиц составляла в 2019 году 73 415 человек. В течение анализируемого периода наблюдается четкая тенденция миграционной убыли сельского населения. Показатели отрицательного сальдо миграции сельского населения в 2010 году – 30 258 человек, в 2015 году – 63 529 человек, в 2016 году – 83 940 человек, в 2017 году – 50 052 человека и 2018 году – 61 691 человек.

В 2019 году показатель естественного прироста сельского населения в Казахстане сложился на уровне 111 258 человек, что больше уровня 2010 года на 8 471 человека.

Таким образом, можно сделать вывод, что численность сельского населения увеличилась за период с 2010 по 2019 годы за счет естественного прироста, так как сальдо миграции на протяжении анализируемого периода имело отрицательное значение.

Суммарный коэффициент рождаемости сельского населения в 2019 году составил 3,17 и городского населения – 2,75. В Павлодарской области значение показателя для сельского населения равно 2,48; в Туркестанской области – 3,72; в Алматинской области – 3,45.

В 2019 году число родившихся в сельской местности составило 162 814 человек, что выше показателя предыдущего 2018 года на 29 человек, но ниже аналогичного показателя 2015 года на 9 836 человек. Число умерших сельчан в 2019 году по сравнению с 2010 годом уменьшилось на 10 187 человек. Показатели смертности постепенно сокращаются по причине проведения профилактических мер, повышения качества медицинских услуг, популяризации здорового образа жизни.

Возрастная пирамида сельского населения Казахстана в 2019 году выглядела следующим образом: удельный вес лиц в возрасте 0-14 лет достиг 30,49%; лиц в возрасте 15-64 лет – 62,53%; лиц 65 лет и старше – 6,98%. В течение 9 лет заметны следующие изменения: увеличе-

ние доли лиц в возрасте 0-14 лет по сравнению с 2010 годом на 2,95% и лиц, входящих в группу 65 и старше, по сравнению с 2010 годом на 0,7% при одновременном уменьшении доли лиц в возрасте 15-64 лет с 66,18% до 62,53%. В результате возрастает нагрузка на население трудоспособного возраста.

К негативным тенденциям можно отнести рост числа разводов и снижение количества браков. Так, в 2019 году количество браков по сравнению с 2010 годом уменьшилось на 17 085. За этот же период количество разводов, напротив, увеличилось с 10 563 в 2010 году до 15 715 в 2019 году. Показатели ожидаемой продолжительности жизни сельского населения за анализируемый период изменились с 68,35 лет в 2010 году до 73,35 лет в 2019 году.

Таблица 4 – Средний возраст сельского населения в разрезе областей Казахстана

Наименование областей	2015	2016	2017	2018	2019
Республика Казахстан	30,5	30,6	30,8	30,9	31,0
Акмолинская	34,4	34,5	34,9	35,0	35,1
Актюбинская	30,7	30,9	31,1	31,4	31,5
Алматинская	30,5	30,6	30,5	30,6	30,7
Атырауская	28,8	28,9	29,0	29,1	29,1
Западно-Казахстанская	32,8	33,0	33,2	33,4	33,6
Жамбылская	28,5	28,6	28,7	28,9	29,0
Карагандинская	33,2	33,4	33,7	33,9	34,1
Костанайская	35,4	35,7	36,1	36,4	36,7
Кызылординская	28,3	28,5	28,7	28,9	29,1
Мангистауская	26,3	26,3	26,5	26,5	26,5
Павлодарская	34,3	34,5	34,7	34,7	34,8
Северо-Казахстанская	36,5	36,9	37,2	37,5	37,7
Туркестанская	26,4	26,5	26,7	26,9	27,1
Восточно-Казахстанская	35,2	35,5	35,7	36,0	36,2
Примечание – составлено авторами на основе данных Комитета по статистике Министерства национальной экономики Республики Казахстан					

Средний возраст сельского населения в 2015 году для мужчин и женщин составлял 30,5 лет; в 2019 году – 31,0 лет. Заметна тенденция увеличения среднего возраста сельского населения.

Наибольшее значение показателя среднего возраста сельского населения для обоих полов наблюдалось в 2019 году в Северо-Казахстанской области – 37,7 лет; в Костанайской области

– 36,7 лет; в Восточно-Казахстанской области – 36,2 лет; в Акмолинской области – 35,1 лет; в Павлодарской области – 34,8 лет.

Для сравнения, в Алматинской области средний возраст женщин и мужчин в сельской местности равен 30,7 лет; в Туркестанской области – 27,1 лет; в Жамбылской – 29 лет; в Мангистауской области – 26,5 лет; в Кызылординской области – 29,1 лет.

Миграция сельского населения оказывает непосредственное влияние на возрастную пирамиду сельского населения. Миграционной активностью как правило отличаются лица более молодого трудоспособного возраста. Как видно из приведенных данных, в тех областях, где наблюдался заметный миграционный отток, произошли сдвиги в сторону увеличения среднего возраста сельчан. В южных областях, где фиксировался, наоборот, приток сельского населения, средний возраст мужчин и женщин ниже, что сказывается на темпах воспроизводства сельского населения в стране в целом.

Таким образом, при исследовании демографической ситуации в сельской местности выявлены следующие тенденции:

- миграционная убыль сельского населения в восьми областях Казахстана, то есть сальдо миграции сельского населения приобрело отрицательное значение, что влечет за собой механический отток населения из сельской местности в города и другие страны;

- показатели рождаемости сельского населения в настоящее время выше, чем городского населения. Но из-за изменения репродуктивного поведения сельского населения, перехода от многодетности к малодетности, усложнения социально-экономической обстановки в стране и мире естественный прирост сельского населения может замедлиться;

- вследствие занятости женщин, повышения образовательного уровня молодежи, изменения ценностных представлений и установок заметна тенденция увеличения среднего возраста вступления в брак и ограничения детей в браке;

- разводы, нестабильность семейных отношений влияют отрицательно на формирование демографического и трудового потенциала сельских территорий.

Следует отметить, что в Казахстане на государственном уровне проводится демографическая политика, регулируются процессы как

механического движения, так и естественного воспроизводства населения. Экономико-статистический анализ, выявленные тренды показали, что для предотвращения демографического кризиса в сельской местности нужны превентивные меры, с одной стороны, по стимулированию рождаемости, укреплению института семьи и семейно-брачных отношений, снижению смертности, повышению качества жизни сельского населения, с другой стороны, снижению миграционного оттока за счет дифференцированного подхода к осуществлению комплекса мер по закреплению трудовых ресурсов на селе, повышению уровня занятости и доходов сельского населения за счет развития агробизнеса, популяризации деревенского образа жизни, выравниванию условий жизни в городе и селе, созданию высокооплачиваемых рабочих мест и решению проблем развития сельских территорий.

Заключение

Накопившиеся годами проблемы и негативные тенденции в демографической ситуации в сельской местности необходимо рассматривать в качестве демографических угроз депопуляции населения, поддержания суверенитета и национальной безопасности страны.

Для предотвращения демографического дефицита в сельской местности необходимы инвестиции в развитие и благоустройство сельских территорий, инновации с тем, чтобы преодолеть различия в производственных и культурно-бытовых условиях жизни в городе и селе, обеспечить доступ к качественным медицинским и государственным услугам.

Только при таком научном комплексном подходе возможно решение задач, поставленных перед агропромышленным комплексом, обеспечить повышение качества жизни сельского населения и устойчивость социально-экономического развития страны.

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THE ROLE OF WOMEN IN THE PROCESS OF BUYING WHITE GOODS AND AN APPLICATION FOR KAZAKHSTAN

The main purpose of this study is to determine the role of Kazakh women in the purchase process of white goods. We also aimed to reveal the role distribution inside the family. Moreover, we tried to determine the demographic and socio-economic variables that affect the role of women in the decision-making process of purchase decisions. Because of the rapidly changing economic conditions and intense competitive environment in Kazakhstan requires businesses to carefully perform customer analyses for a more successful marketing. Therefore, this study investigates the role of women in the purchase process of white goods in northern Kazakhstan (North, South, East and West). For this, we conscripted 396 Kazakh women living in Northern, Southern, Eastern and Western Kazakhstan and gave questionnaires to them. Primary data is collected via questionnaires using a proven scale and we used methods such as Cronbach's Alpha Coefficient, Confirmatory Factor Analysis (CFA), and Structural Equivalency Model (SEM) in order to evaluate the results.

Key words: purchase, purchase process, purchase decisions, decision-making process, white goods, women's role.

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Тұрмыстық техниканы сатып алу үдерісіндегі әйелдердің рөлі және Қазақстан үлгісі

Бұл зерттеу жұмысының негізгі мақсаты тұрмыстық техниканы сатып алу үдерісіндегі қазақстандық әйелдердің рөлін анықтау болып табылады. Біз сондай-ақ отбасы ішіндегі рөлдердің бөлінісін де анықтауға тырыстық. Бұдан басқа, біз тұрмыстық техниканы сатып алу туралы шешім қабылдау үдерісінде әйелдердің рөліне әсер ететін демографиялық және әлеуметтік-экономикалық ерекшеліктерді де анықтауды мақсат еттік. Себебі Қазақстандағы жылдам өзгеріп жатқан экономикалық жағдайлар мен шиеленіскен бәсекелестік орта кәсіпорындардан табысты маркетинг үшін клиенттердің табиғаты мен мінез-құлқын мұқият талдауды талап етуде. Сондықтан бұл зерттеу жұмысында Қазақстанның аймақтарында (Солтүстік, Оңтүстік, Шығыс және Батыс) өмір сүретін әйелдердің тұрмыстық техниканы сатып алу үдерісіндегі рөлі зерттеледі. Ол үшін Солтүстік, Оңтүстік, Шығыс және Батыс Қазақстанда тұратын 396 қазақстандық әйелге сауалнама жүргізілді. Осылайша бастапқы деректер сауалнама шкаласын пайдалану арқылы жиналды және деректерді талдау үшін, нәтижелерді бағалау үшін Кронбах Альфа коэффициенті, Растаушы факторларды талдау (CFA) және Құрылымдық эквиваленттік модель (SEM) әдістері пайдаланылды. Осы талдау нәтижелері бойынша зерттеу жұмысының барлық үш гипотезасы да қабылданды. Ал кейінгі зерттеулерді модельге жаңа айнымалылар қосу арқылы кеңейтуге болады.

Түйін сөздер: сатып алу, сатып алу процесі, сатып алу туралы шешім, шешім қабылдау процесі, тұрмыстық техника, әйелдердің рөлі.

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Роль женщин в процессе покупки бытовой техники на примере Казахстана

Основной целью данного исследования является определение роли казахстанских женщин в процессе покупки бытовой техники. Также были попытки определить распределение ролей в семье. Кроме того, выявлены демографические и социально-экономические факторы, которые

вливают на роль женщин в процессе принятия решений о покупке бытовой техники. Это связано с тем, что быстро меняющаяся экономическая ситуация и острая конкуренция в Казахстане требуют тщательного анализа клиентов для успешного маркетинга. Поэтому в данном исследовании рассматривается роль женщин, проживающих в регионах Казахстана (Север, Юг, Восток и Запад), в процессе покупки бытовой техники. С этой целью было опрошено 396 казахстанских женщин, проживающих в Северном, Южном, Восточном и Западном Казахстане. Таким образом, исходные данные были собраны с использованием шкалы анкеты и методов анализа альфа-коэффициента Кронбаха, анализ подтверждающих факторов (CFA) и модели структурной эквивалентности (SEM), которые использовались для анализа данных и оценки результатов. На основании результатов этого анализа были приняты все три гипотезы исследования. Дальнейшие исследования могут быть расширены путем добавления новых переменных в модель.

Ключевые слова: покупка, процесс покупки, решение о покупке, процесс принятия решения, бытовая техника, роль женщины.

Introduction

In modern society, consumption is an indispensable part of daily life. In addition, the most important consumption unit is the family. The family is traditionally the unit where decisions regarding which daily goods and services will be consumed are given (Martinez and Polo, 1999: 461-481). The family is very important for marketing because of its purchase capacity and frequency. Most of these goods and services are purchased for the consumption of family; hence, family is an important unit for purchasing decisions. Although goods and services are purchased for the individual consumptions of family members, the whole family (Cengiz, 2009: 208) affects the decision process.

Modern socio-economic and technological developments affected the roles in the family, especially the role of woman drastically. These developments turned women into a more active actor in the family. Women play a very important role in the process of purchase decisions of the family as both a decision maker and influencer. Hence, it is important to determine her exact role in this process. Details of her role will surely affect the marketing strategies (Nakip and Yaras, 1999: 246). Besides this role and effect becomes more important every day.

Developments such as the increase in the education level of women increase in the number of double income families, and increased participation of women in professional life transformed the role of woman in the family and affected the traditional decision-making structure in the family (Lee and Beatty, 2002: 25; Nanda et al., 2006: 112).

This study examined the role of Kazakh women in the purchase process of white goods. We aimed to determine which features of the white goods (refrigerator, washing machine, dishwasher etc.) affect these preferences.

Literature Review

Historically, family decisions have attracted the attention of many consumer researchers and behavioral scientists. The family has become the focus of attention to understand the husband and wife roles in the consumer buying decision process. Various studies have been carried out in the field of husband and wife purchasing decision-making roles regarding the purchase of products and services:

In his study, Sheth (1974) attempted to develop a comprehensive theory of family buying decisions based on empirical evidence in various disciplines as well as marketing. This study attempted to develop a conceptual framework for common and independent decision-making indicators in resolving conflicts in family purchasing decisions.

In his research, Davis (1976) examined the existing literature on domestic decision-making from three aspects. These dimensions are expressed with the following questions: "Which family member is involved in economic decisions?", "What is the nature of family decision processes?", and "Are decision-making results affected by differences in family role structure and decision strategies?" He examined these questions one by one and interpreted them separately. Thus, the decisions of family members in economic decisions, who made the purchases in certain product categories and who made the decision were investigated. In the analysis, he tried to come up with an in-house decision-making theory, focusing on decision making, such as decision-making or who wins.

Qualls (1987) examined the effect of gender role orientation on the outcomes of the family's buying decisions. In the context of gender-oriented behavior, its reliability and validity have been tested and the efficiency of hidden variable modeling has been examined to provide a basis for the creation of a future decision-making theory.

Turkish academicians published many studies on the purchase decision process and behavior of women in purchasing decisions.

Nakip and Yaras (1999) examined the role of Turkish women in purchasing according to Engel, Kollat, and Blackwell's model. In the study, it was determined that Turkish women differed in their roles in purchasing decisions in terms of product groups and their employment status. Working in an income-generating job outside the home greatly affects the status of women in the family. Working women have a significantly higher impact on the purchasing decisions of their families. Compared to non-employed women, working women played a more active role in family purchasing decisions. The study carried out in Kayseri showed that the man retains his weight in the family, although slightly, and the role of the woman became more prominent.

Erbil and Pasinlioğlu (2004) examined the role of women in the family decision-making process. The study was conducted on women who applied to Ordu Provincial Maternity and Children's Hospital, who were married and agreed to participate in the study. It was found that the common decision-making rate of spouses in the family is 42.8% on average. However, when we look at the issues that spouses decide on their own, it is seen that men decide on important issues and women decide less important issues. Besides, it was observed that variables such as the number of children and gender of the children do not have a significant effect on the contribution of women to the decision-making process.

Kitapçı and Dörtüol (2009), in a study performed in Sivas province, discussed the family buying decision process, and pointed out the changing role of women. They found that fathers have more effect on the buying decisions in the traditional Turkish family structure. Mothers are more effective in purchasing decisions in product groups such as clothing, children's clothing, and household items.

Cengiz (2009) investigated which spouse is more effective in family purchasing decisions in his field research in Trabzon, Ankara, İzmir, and Diyarbakır. In purchasing decisions, he concluded that the husband is more dominant in the low-income groups, whereas either in the medium and high-income groups, the decisions are taken jointly or the woman is dominant. In İzmir and Ankara, women lead the purchasing decision whereas in Diyarbakır, husbands are effective and in Trabzon, decisions are taken jointly.

Özbek and Koç (2009) investigated whether there is a difference between families living in

rural and urban settlements at the stage of making a purchase decision for durable goods in terms of individuals and their roles. Families living in rural areas shop mostly from manufacturers and dealers. In the cities, they shop from manufacturers, dealers and department stores.

Çetin (2016) attempted to find out the factors affecting the choice of clothes of female university students and to determine whether they prioritize the brand of the product, characteristics of the product, or their socio-economic status in their purchasing behavior.

Kazakh academicians also studied the purchasing decision process and women's purchasing behavior in the family.

Potluri, Abikayeva, Usmanova, and Challagundla (2014) revealed the spending habits and purchasing preferences of Kazakh women under four different age groups in their studies in Almaty.

Vural and Güllü (2017) examined the role of women in purchasing decisions of families living in three cities of South Kazakhstan (Shymkent, Turkestan, and Kentav). In this study, they revealed the results of women's role in purchasing in Kazakh families. The socio-demographic characteristics of families showed that family members generally have high education levels, live in crowded families, and women play an active role in business life.

The Importance and Purpose of the Research

The main purpose of this study is to determine the role of Kazakh women in the purchase process of white goods. We also aimed to reveal the role distribution inside the family. Moreover, we tried to determine the demographic and socio-economic variables that affect the role of women in the decision-making process of purchase decisions.

Methodology

The primary data is collected through the survey method. For this purpose, a questionnaire is prepared to determine the role of Kazakh women in the purchasing decision process. This scale was also used in the previous study (Can, 2006: 78-82).

The dependent variable of this study is the role of women in the purchase decision process of the family. We used the 5-point Likert scale to measure the effect of women on the decisions (Strongly Agree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree).

The purchase decision-making process is a multileveled process and participation level and effect of every member of the family varies from phase to phase, and according to socio-economic

factors, interest level, information level, and skill differences. Purchase decision-making process consists of 1. *Need Recognition*, 2. *Determination of Alternatives*, 3. *Evaluation of Alternatives*, and 4. *Purchase Decision and Purchasing*. The study will analyze the role of women by considering these phases.

We used methods such as Cronbach’s Alpha Coefficient, Confirmatory Factor Analysis (CFA), and Structural Equivalency Model (SEM) in order to evaluate the results.

Hypotheses

H1: Need recognition effects the purchase decisions.

H2: The determination of alternatives affects the purchase decision.

H3: The evaluation of alternatives affects the purchase decision.

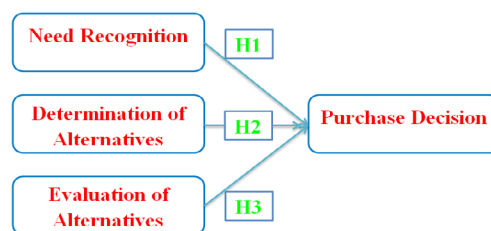


Figure 1 – Schema of the Research Model and Hypotheses
Note – compiled by authors

Results and Discussion

Structural Validation of the Scales using CFA and the Analysis of the Study Method Using SEM. The demographic characteristics of the women surveyed are shown in Table 1.

Table 1 – Demographic characteristics of women surveyed

Region	Frequency	%	Profession	Frequency	%
Northern Kazakhstan	125	31.5	Student	52	13.2
Southern Kazakhstan	76	19.2	Worker	32	8.1
Eastern Kazakhstan	83	21.0	State Officer	64	16.2
Western Kazakhstan	112	28.3	Retired	37	9.3
Place of Residence			Unemployed	172	43.4
Urban	284	71.7	Tradesmen/Craftsmen	39	9.8
Rural	112	28.3	Income Group (Thousand Tenge)		
Marital Status			Narrow Income (-100)	105	26.5
Married	241	60.9	Middle Income-Lower (101-150)	103	26.1
Single	155	39.1	Middle Income-Upper (151-250)	92	23.2
Education Status			High Income (251+)	96	24.2
Primary school	2	0.5	Age Groups		
Middle School	22	5.6	Young (-30)	89	22.5
High School	67	16.9	Adult (30-35)	90	22.7
University	150	37.9	Middle Aged (36-45)	126	31.8
Post Graduate	155	39.1	Elder (45+)	91	23.0
Total	396	100	Total	396	100

Note – compiled by authors on the basis of research

As seen in Table 1, 125 of the women who answered the survey were from North Kazakhstan, 76 from South Kazakhstan, 83 from East Kazakhstan, and 112 from Western Kazakhstan. The ratio distributions of these within the total are 31.5%, 19.2%, 21%, and 28.3%, respectively. Among the women participating in the survey,

71.7% live in urban areas and 28.3% live in rural areas. Of these, 241 are married and 155 are single. The ratio distributions of these within the total are 60.9% and 39.1%, respectively. Among them, 23% have high school and six (primary, school, secondary and high school), 37.9% have university and 39.1% have postgraduate education. According

to the profession, 13.2% are students, 8.1% are workers, 16.2% are civil servants and 62.5% are others (retired, unemployed, tradesmen/craftsmen). 26.5% of them were in the low-income group (under 100000 Tenge) and 26.1% were in the middle-income group (between 101000 – 150000 Tenge). In contrast, 23.2% of women are in the upper-middle-income group (151000 – 250000 Tenge) and 24.2% are in high-income group (251000 + Tenge) (1 TL = 68 Tenge at the time of the study). 22.5% of the women who answered the questionnaire were young (- 30 years old), 22.7% were adults (30-35 years), 31.8% were middle-aged (36-45 years) and 23% three of them were elderly (45+ age).

As seen in Table 2, 210 of the women participating in the survey prefer to pay in cash and 186 pay in installments. The percentage of these is 53% and 47% respectively. Of the participants, 13.4% consider the brand very important, 26% important and 60.6% unimportant in their purchasing decisions. Of the participants, 69.4% consider the quality very important, 28.1% consider it important and 2.5% consider it unimportant in their purchasing decisions. Of the participants, 17.2% consider the price very important, 46% important, and 36.8% the third unimportant in their purchasing decisions.

Table 2 – Product purchasing method of the survey participants and distribution of the importance of product features

Payment Method	Frequency	%
Cash	210	53.0
Installment	186	47.0
Importance of Brand		
Very Important	53	13.4
Important	103	26.0
Unimportant	240	60.6
Importance of Quality		
Very Important	275	69.4
Important	111	28.1
Unimportant	10	2.5
Importance of Price		
Very Important	68	17.2
Important	182	46.0
Unimportant	146	36.8
Total	396	100
Note – compiled by authors on the basis of research		

Table 3 – The goodness of fit criteria values for DFA and YEM models

Index	Need Recognition	Determination of Alternatives	Evaluation of Alternatives	Purchase Decision	Structural Equivalency Model (SEM)
χ^2/df	3,814	4,206	4,082	0,358	4,74
RMSEA	0,084	0,09	0,088	0,001	0,097
Note – compiled by authors on the basis of research					

We provided CFA and SEM compatibility statistic values, respectively for the validity of the study scales and for the study method. Results show that the scales used in the study are structurally valid and the effect model is compatible with the criteria.

When the effect of the recognition of need is examined in accordance with the CFA model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 1-a (“Advertisements are effective on me in recognizing my needs”), and the least effective items are 1-b (“If

I got bored with the product, then I begin to look for alternatives”) and 1-c (“My husband/relative were effective in my decision to buy this product”).

When the effect of the determination of alternatives is examined in accordance with the CFA model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 1-d (“My husband/relatives have an effect of making me visit stores to view various brands and models”), and the least effective item is the 1-e (“Payment conditions are effective when determining the alternatives”).

Table 4 – DFA findings for the recognition of need scale

	Estimate	S. Estimate	S. Error	Critical Value	P
When one of my friends purchase a product, my need is also triggered	1	0,44			
Advertisements are effective on me in recognizing my needs	1,454	0,694	0,3	4,846	***
If I got bored with the product, then I begin to look for alternatives	0,679	0,337	0,166	4,098	***
My husband/relative were effective in my decision to buy this product	0,643	0,338	0,152	4,229	***
The improvement in my financial situation creates new needs for me	0,712	0,388	0,155	4,6	***
Note – compiled by authors on the basis of research					

Table 5 – DFA findings for the determination of alternatives scale

	Estimate	S. Estimate	S. Error	Critical Value	P
I pay attention to the utility of a product when determining the alternatives	1	0,338			
When determining the alternatives, I pay attention to the price of the product	0,966	0,319	0,235	4,112	***
When determining the alternatives, I pay attention to the features of the product	0,793	0,315	0,192	4,124	***
Payment conditions are effective when determining the alternatives	0,983	0,305	0,244	4,028	***
I get my information about a product mostly from my husband/relatives	1,747	0,54	0,343	5,091	***
I often get information about the product I will buy from my friends	1,21	0,384	0,265	4,561	***
I often get information about the product I will buy from salespeople	1,83	0,55	0,357	5,122	***
I often get information about the product I will buy based on my experience	1,406	0,559	0,265	5,299	***
My husband/relatives have an effect of making me visit stores to view various brands and models	1,875	0,591	0,349	5,379	***
My wife/relatives are effective in deciding how much to spend	1,068	0,301	0,271	3,949	***
Note – compiled by authors on the basis of research					

Table 6 – DFA findings for the evaluation of alternatives scale

	Estimate	S. Estimate	S. Error	Critical Value	P
While evaluating the alternatives, I list the features I am looking for and prefer the product that meets my needs the most	0,246	0,213	0,061	4,024	***
When I determine the alternatives of a product, I make comparisons with the products of other firms	0,199	0,174	0,06	3,291	***
When evaluating the brand I will buy, I make price-quality comparisons	0,159	0,25	0,035	4,486	***

Continuation of table 6

	Estimate	S. Estimate	S. Error	Critical Value	P
My wife/relatives are effective in choosing the color/model of the product	0,902	0,663	0,07	12,907	***
My wife/relatives are effective in insisting on what brand of product to buy	1,106	0,824	0,068	16,251	***
My husband/relative were effective in my decision among alternatives	1,286	0,914	0,073	17,505	***
My wife/relatives are effective in deciding which store to buy the product	1	0,742			
Note – compiled by authors on the basis of research					

When the effect of the evaluation of alternatives is examined in accordance with the CFA model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 1-f

(“*My husband/relative were effective in my decision among alternatives*”), and the least effective item is the 1-g (“*When I determine the alternatives of a product, I make comparisons with the products of other firms*”).

Table 7 – DFA findings for the purchase decision scale

	Estimate	S. Estimate	S. Error	Critical Value	P
The offers of salesperson effect my decision of purchase	1	0,684			
Negative thoughts of other consumers about the product I chose affect me while shopping	0,472	0,343	0,123	3,837	***
If I cannot find the product I want to buy in the store, I will place an order and wait for delivery	0,67	0,454	0,162	4,142	***
Physical conditions of a store (design, ambiance, lightning etc.) affects my decision	0,537	0,333	0,142	3,786	***
Note – compiled by authors on the basis of research					

When the effect of the purchase decision is examined in accordance with the CFA model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 1-h (“*The offers of salesperson effect my decision of purchase*”), and the least effective item is 1-i (“*Physical conditions of a store (design, ambiance, lightning etc.) affects my decision*”).

When the effect of the recognition of need is examined in accordance with the SEM model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 2-a (“*My husband/relatives are effective on my decision regarding the utility of purchasing a product*”), and the least effective item is the 2-b (“*When one of my friends purchase a product, my need is also triggered*”).

When the effect of the determination of alternatives is examined in accordance with the SEM model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 2-c (“*I get my information about a product mostly from my husband/relatives*”), and the least effective item is 2-d (“*I pay attention to the utility of a product when determining the alternatives*”).

When the effect of the evaluation of alternatives on the scale items is examined in accordance with the SEM model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire item is 2-e (“*My husband/relatives have an effect on my decision among the alternatives*”), and the least effective item is 2-f (“*When determining the alternatives, I make comparisons with the products of competing firms*”).

Table 8 – Effects of the needs scale items

	Estimate	S. Estimate	S. Error	Critical Value	P
When one of my friends purchase a product, my need is also triggered	1	0,286			
Advertisements are effective on me in recognizing my needs	1,336	0,407	0,223	5,984	***
If I got bored with the product, then I begin to look for alternatives	1,575	0,496	0,264	5,967	***
My husband/relative were effective in my decision to buy this product	1,699	0,567	0,287	5,913	***
The improvement in my financial situation creates new needs for me	0,852	0,295	0,196	4,357	***
Note – compiled by authors on the basis of research					

Table 9 – Effects of the determination of alternatives scale items

	Estimate	S. Estimate	S. Error	Critical Value	P
I pay attention to the utility of a product when determining the alternatives	1	0,257			
When determining the alternatives, I pay attention to the price of the product	1,048	0,259	0,303	3,46	***
When determining the alternatives, I pay attention to the features of the product	1,23	0,369	0,303	4,056	***
Payment conditions are effective when determining the alternatives	1,169	0,274	0,328	3,56	***
I get my information about a product mostly from my husband/relatives	2,956	0,686	0,632	4,676	***
I often get information about the product I will buy from my friends	1,452	0,353	0,357	4,064	***
I often get information about the product I will buy from salespeople	2,052	0,46	0,477	4,3	***
I often get information about the product I will buy based on my experience	1,67	0,501	0,376	4,441	***
My husband/relatives have an effect of making me visit stores to view various brands and models	2,628	0,627	0,569	4,622	***
My wife/relatives are effective in deciding how much to spend	1,963	0,415	0,464	4,228	***
Note – compiled by authors on the basis of research					

Table 10 – Effects of the scale of alternative assessment items

	Estimate	S. Estimate	S. Error	Critical Value	P
While evaluating the alternatives, I list the features I am looking for and prefer the product that meets my needs the most.	1	0,265			
When I determine the alternatives of a product, I make comparisons with the products of other firms.	0,618	0,163	0,157	3,937	***
When evaluating the brand I will buy, I make a price-quality comparison.	0,522	0,253	0,143	3,639	***

Continuation of table 10

	Estimate	S. Estimate	S. Error	Critical Value	P
My wife/relatives are effective in choosing the color/model of the product.	2,961	0,676	0,576	5,136	***
My wife/relatives are effective in insisting on what brand of product to buy.	3,656	0,855	0,693	5,276	***
My husband/relative were effective in my decision among alternatives.	3,962	0,87	0,749	5,291	***
My wife/relatives are effective in deciding which store to buy the product.	2,927	0,692	0,567	5,164	***
Note – compiled by authors on the basis of research					

Table 11 – Effects of purchase decision scale items on the scale

	Estimate	S. Estimate	S. Error	Critical Value	P
The offers of salesperson effect my decision of purchase	1	0,32			
While shopping, the negative thoughts of other consumers affect me	0,84	0,288	0,191	4,405	***
If I cannot find the product I want to buy in the store, I will place an order and wait for delivery	1,192	0,384	0,222	5,379	***
Physical conditions of a store (design, ambiance, lightning etc.) affects my decision	0,803	0,239	0,212	3,785	***
Note – compiled by authors on the basis of research					

When the effect of the purchase decision on the scale items is examined in accordance with the SEM model, we see that the effect on all items is statistically significant. According to the standard estimation values, the most effective questionnaire

item is 2-g (“*If I can’t find the product I want to buy in the store, I will place an order and wait for delivery*”), and the least effective item is the 2-h (“*The negative physical conditions of a store (design, ambiance, lightning etc.) affects me*”).

Table 12 – Recognition of needs, determination of alternatives and evaluation of alternatives on the purchase decision

	Estimate	S. Estimate	S. Error	Critical Value	P
Need Recognition	1	0,972			
Determination of Alternatives	0,61	0,84	0,15	4,058	***
Evaluation of Alternatives	0,48	0,654	0,114	4,223	***
Note – compiled by authors on the basis of research					

When we examined the effects of the variables, recognition of need, determination of variables, and evaluation of variables on the purchase decision in accordance with the SEM model, we see that the effects of all variables is statistically significant. According to the standard estimation values, the most effective variable is the recognition of need

whereas the least effective variable is the evaluation of alternatives. According to the results, a 1-point increase in the recognition of need variable creates a 0.972-point increase in the purchase decision variable.

According to these results, all three-research hypotheses are accepted.

Conclusion

This study is conducted in Kazakhstan and on the Kazakh women that purchase white goods. It can be better interpreted if it is repeated with different consumer goods. This may help us to explain the effect of the recognition of need on the purchase decision.

When we analyzed the effect of independent variables of the purchase decision, we see that the most effective one is the recognition of the need. The second in the order of effectiveness is the determination of the alternatives and the third, and the last one is the evaluation of the alternatives. These results show that women prioritize the need when they decide to purchase a white good.

According to the Confirmatory Factor Analysis (CFA), the most important item in the recognition of the need is the 1-a (“*Advertisements are effective on me in recognizing my needs*”). But according to the Structural Equity Model (SEM), the most important item in the purchase decision is the 2-a (“*My husband/relatives are effective on my decision regarding the utility of purchasing a product*”). This

is one of the most interesting results of this study. This result shows that whereas the advertisements are effective on the women for recognizing their needs, their partners and relatives are more effective in their purchase decisions.

We reached similar results in the determination of alternatives. In this phase, item 2-c (“*I get my information about a product mostly from my husband/relatives*”) turned out to be an important factor. But the item 2-i (“*I mostly rely on past experiences regarding a product*”) is more important in the purchase decision. This means that while women prefer to get information from their husbands and relatives in the determination of alternatives, they rely on their experiences when deciding to purchase a product.

When the literature is examined, it is seen that the effects of many different variables are mentioned in the shopping decision. In this research, the effects of only three variables were examined. The research can be applied by adding new variables to the model. In particular, the effect of variables related to consumers’ personal information on the decision to purchase can be designed as a research in itself.

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INFLUENCE OF TECHNOLOGY ADOPTION ON TAX AUDIT IN OSUN STATE, NIGERIA

This study examined the influence of technology adoption on tax audit in Osun State. This work used the Survey research design, and the source of data was primary which was generated by the administration of well-structured questionnaire which was ranked with five-point Likert scale, 100 copies of questionnaire were randomly distributed amongst staffer of Federal Inland revenue service, Osun state, Osun State internal revenue service and some business owners out of which 75 were filled and returned. Ordinary least square method of regression analysis was used to analyse the data collected. Findings from this analysis showed that the coefficient of determination indicated that technology explains 50% of the total variation in tax compliance while it explains 69% of the total variation in revenue increase. It was established that there was positive relationship between adoption of technology and tax compliance and revenue increase in Osun state. Pearson Correlation matrix shows the direction, significant and strength of the bivariate associations amongst the variables in the study. The study recommended that the Government should invest heavily on technology for the purpose revenue increase, Government should review tax law to reduce tax evasion to barest minimum, and that the tax authority should endeavor to be completing every tax audit at record time.

Key words: technology, tax audit, tax administration, tax evasion, tax avoidance.

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Технологияларды енгізудің Нигерияның Осун штатындағы салық аудитіне әсері

Бұл мақалада технологияларды енгізудің Осун штатындағы салық аудитіне әсері зерттелген. Бұл жұмыста сауалнама әдісі қолданылды және мәліметтер көзі ретінде бастапқы құрылымдық мәліметтер болды, олар бес баллдық Лайкерт шкаласы бойынша жүйеленген сауатты сауалнаманы құру арқылы алынған, 100 сауалнама Осун штатының салық қызметі, Осун штатының ішкі кірістер басқармасы қызметкерлері және кәсіп иелері арасында кездейсоқ таратылған, оның 75-і толтырылып, қайтарылды. Жиналған деректерді талдау үшін әдеттегі ең кіші квадраттар регрессия әдісі қолданылды. Осы талдаудың нәтижелері детерминация коэффициенті технологияның салықтық сәйкестіктің жалпы ауытқуының 50%-ын түсіндіретіндігін, ал табыстың жалпы өзгеруінің 69%-ын түсіндіретіндігін көрсетті. Осун штатында технологияларды енгізу және салықтық сәйкестік пен кірістің өсуі арасында оң байланыс бар екендігі анықталды. Пирсон корреляциялық матрицасы зерттеу барысында айнымалылар арасындағы екі өлшемді ассоциациялардың бағытын, маңыздылығын және күшін көрсетті. Зерттеу барысында үкіметке кірістерді көбейту үшін технологияларға қомақты қаражат салуды, салық төлеуден жалтаруды минимумға дейін азайту үшін үкіметке салық заңдарын қайта қарауды және салық органдарына салық тексерулерін мүмкіндігінше тез өткізуге ұмтылуды ұсынды.

Түйін сөздер: технология, салық аудиті, салық әкімшілігі, салық төлеуден жалтару.

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Влияние внедрения технологий на налоговый аудит в штате Осун Нигерии

В данной статье исследовано влияние внедрения технологий на налоговый аудит в штате Осун. Авторами использовался опросный метод, а источником данных были первичные данные, которые были получены путем создания хорошо структурированного вопросника, ранжированного по пятибалльной шкале Лайкерта, 100 экземпляров вопросника были

случайным образом распределены среди сотрудников Федеральной налоговой службы штата Осун, Службы внутренних доходов штата Осун и владельцам бизнеса, из которых 75 были заполнены и возвращены. Для анализа собранных данных использовался обычный метод наименьших квадратов регрессионного анализа. Результаты этого анализа показали, что если ориентироваться на коэффициент детерминации, то технология объясняет 50% общей вариации в соблюдении налоговых требований, в то же время она объясняет 69% общей вариации в увеличении доходов. Было установлено, что существует положительная взаимосвязь между внедрением технологий и соблюдением налоговых требований, и увеличением доходов в штате Осун. Матрица корреляции Пирсона показывает направление, значимость и силу двумерных ассоциаций между переменными в исследовании. В исследовании рекомендовано правительству вкладывать значительные средства в технологии с целью увеличения доходов, а также правительство должно пересмотреть налоговое законодательство, чтобы сократить уклонение от уплаты налогов до минимума, а налоговые органы должны стремиться проводить налоговые проверки в минимальные сроки.

Ключевые слова: технология, налоговый аудит, налоговое администрирование, уклонение от уплаты налогов.

Introduction

The country's prosperity depends on the amount of resources the government creates and uses to improve the public goods of people in this country (Appah & Eze, 2013). Increased management costs, combined with reduction in revenue collection, have led the Nigerian federal government and other tier of governments to develop revenue-raising strategies. Therefore, a very important approach that can be taken to raise the level of income of the Federation and that of the state or Local government in the country is to adopt efficient and effective tax administration. This can only be achieved through a coherent tax compliance policy for Nigerian citizens. However, non-compliance is one of the government's challenge experienced in increasing and improving tax revenues (Abba & Izzy, 2013; Alshrouf, 2019). Taxation may be described as an obligatory levy or allocation of resources from individuals and firms to the government authorities on the basis of conceived principles and without locus to any particular benefits to gain in order to understand the country's economic development and social objectives (Amah & Nwaiwu, 2018).

Olaoye and Ekundayo (2018) stated that a tax audit is an examination of taxpayers books of account whether they have properly assessed and reported their tax liabilities and met other various requirements. However, for effective tax administration we must do away with traditional system of pencil and paper and embrace technology for effective tax administration with attendant benefits.

Nigeria economy may be described as mono economy simply because more than 85% of government revenue is from crude oil. This over dependency on crude oil is putting Nigeria at risk

of insolvency whenever there is fall in international price of crude as we witness between 2015 and 2016 when price of crude oil was as low as \$38 per barrel. This was a major reason why our economy went into recession in 2015. Since then the current government has been making frantic effort to increase revenue generation capacity of the country through diversification of sources of revenue. One major source to exploit in this regard is taxation. However, it is a known fact that taxpayers in Nigeria are sensitive to using loopholes in tax policy to avoid or completely evade tax. One of the measures in tax administration to curtail tax evasion and avoidance and to ensure total compliance with tax law is tax audit. However, the success story of tax audit is minimal simply because it takes ages before many tax audit exercises are completed, this inspired the idea of adoption of technology in tax administration and tax audit in order to enhance revenue growth, hence, this research. The objective of this study is to influence of technology adoption on tax compliance and increase in government revenue.

Literature review

Tax Audit

The issue of taxation, which has long been with us, is as old as the world itself. Tax audit is well known from Biblical times and are deeply rooted in the glorious Qur'an. So far, many people have been restless when discussing taxes, or worse, tax revisions. Tax laws are important in government tax policy to prevent tax evasion and to promote compliance with the rules. One of the goals of the tax audit is to encourage taxpayers to comply with the results of the tax audit so that taxpayers in the future comply with the tax legislation. That is why the term "Tax audit" is of utmost importance to the

Government in making efforts to generate revenues (Harelimana, 2018). Audits usually require auditors to conduct an independent review of the company's financial statements and to express their views in accordance with the conditions of engagement and compliance with legal provisions and professional requirements (Amah & Nwaiwu, 2018).

Tax audits are the only basic practice from federal and state tax authorities to assess taxpayers' taxes and accounting records to ensure that proper tax returns are filed, and tax paid correctly during the tax year. The authority charged with tax collection have been a very serious problem in Nigeria over the last few years. Tax authorities have had many difficult tasks trying to assess the taxpayers' accounts, with the main goal of increasing government revenues (Amah & Nwaiwu, 2018). However, non-compliance in tax systems remain an obstacle to tax administration and revenue generation (Olaoye & Ekundayo, 2018).

Failure to comply with the tax code would cause significant damage to a country and betray tax administration and the tax system. The Nigerian government must allow its citizens to assess tax evasion and avoidance as misconduct and a potential problem to the country's economy. As a result, tax audits were introduced to monitor and expose non-compliance with Nigerian law in order to protect tax administration and win the trust of taxpayers (Appah-Eze, 2013). As a result, properly planned audit policies not only achieve better compliance and higher net income for a given input and resource for auditing, but may also have other results that would be normally considered appropriate in a wider economic context (Onoja & Iwarere, 2015).

Clearly, a good tax structure plays a lot in the economic development of any country of which Nigeria is no exception. Where taxes play a multifaceted role in any society, there is poor tax compliance in Nigeria, due to high tax rate. Therefore, in order to effectively achieve the short- and long-term objectives of each economy, it is necessary to increase the level of compliance with tax obligations in order to effectively manage tax revenues. Therefore, one way to improve the level of tax compliance is to perform tax audit.

Tax audits help improve voluntary compliance by identifying and documenting persons who have not paid their taxes properly. Tax audit is one of the most effective policies to prevent tax evasion (Appah & Eze, 2013).

Technology

We are now living in a technology-driven age of new developments and inventions to an

unprecedented degree. With the combination of technology and the economy, we are witnessing the growth of the digital economy on a daily basis. In particular, the international community and developing economies could benefit from these modernizations. However, decision makers must ensure that the benefits due are fully used and shared as fairly as possible. Like any new development, they bring new challenges. In particular, the development of the digital economy has presented challenges to the mobilization of international and domestic taxes. Since taxes are the main source of government revenue for many public services and projects, tax authorities must learn how to adapt their capabilities to keep pace with the rapidly changing landscape of digital economic activity. However, governance capacity remains low in many developing countries in Asia and Africa (Juswanto & Simms, 2017).

Information and communication technologies are an integral part of the core infrastructure of business and society, manifested in great dependence on efficient and widely available electronic communications networks and services, data, software and equipment. Digitalization has changed many aspects of our daily lives and how we regulate our economy, society and functions (Liu, 2011). The exceptional expanse and rapidity of the changes caused by the digital transformation are not lonely in politics. It has also changed the substance of the decision-making process, and a new set of tools is emerging to support the formulation and implementation of the policy (OECD, 2019).

The public sector and its services, including tax collection, should be available and offer a brilliant experience for people and businesses wherever they are and whenever needed. Therefore, taxpayers are expected to be able to handle their affairs online, stress-free (Pinto, 2018). It is known fact that digital technologies are prompting the world faster than we could imagine. Our operational environment is constantly evolving. Tax administrations have no alternative than to adjust and respond to these changes by undertaking digital transformation (Pinto, 2018).

The potential benefits of technology are enormous, with intensive digital information processes, costs can be reduced by 90%, and rollover time can be increased with multiple order levels. In addition, replacing the manual system with software permits organizations to automatically collect data that can be mined to better to better understand the efficiency of the process, profitability and reduce the causes of risk. Real-time digital process reports and dashboards enable managers to solve problems

before they become unsafe (Parviain et al., 2017). Innovative solutions can help tax administrations function more effectively and efficiently. Technology is a unique opportunity, for instance, technology offers novel ways of interacting with taxpayers by allowing administrations to harness data in order to offer customers new upbeat services. Moreover, technology makes administrations more responsive in compliance activity and boosting of their performance (Pintto, 2018).

Taxation is shifting from paper-based to fully digitalised environment; A monumental shift is underway, from filing data on real-time transmission of granular transaction to taxpayers developing their own returns to tax authorities making direct assessments. The era of digital taxation and continuous compliance monitoring is here. Today, compliance with value-added tax (VAT), sales and consumption tax and other transaction-related taxes increasingly demands that companies embrace specific processes for electronic invoicing, on-demand preparation and presentation of electronic ledgers in prescribed e-audit formats, electronic value-added tax (VAT) collection and digital reporting (Fakultet, 2017).

The growth of digital taxation is just the modern development stimulating an era of vastly greater transparency across the whole of international business (Fakultet, 2017).

Empirical Framework

In the work of Olaoye & Ekundayo (2018) that investigated effect of tax audit on tax compliance in Ekiti State, Nigeria shown that tax audit had no substantial effect on tax compliance. This study made use of Multinomial logistic regression for analysis of data. Also the work of Amah & Nwaiwu (2018) which examined the tax audit practice and down south tax generation in Nigeria established that the predictor variable of tax audit practice has positive effect on critical variable of tax revenue in Nigeria. The study employed SPSS version 21.0 using both linear and multiple regression analysis. In the work of Appah and Eze (2013) which investigated a causality analysis between tax audit and tax compliance in Nigeria discovered that tax audit is one of those compliance approaches that can be adopted to attain tax compliance in Nigeria since typical Nigerian is known for tax evasion and avoidance adopting all manner of strategies of not remitting relevant tax to the government.

Additionally, a study by Clement, Stephen and Festus (2018) showed that a successful field tax audit has a major positive impact on the tax productivity in Nigeria. Similarly, in an empirical

study on tax audit in Bangladesh, Zakir (2018) found that big corporate taxpayers appeared to comply with tax law.

Theoretical Framework

Tax auditors must effectively and professionally undertake their duties to confirm that taxpayers meet their tax obligations. On the other hand, a tax audit is the method for collecting facts to assess the amount of tax withheld and the possible suit of taxpayers engaged in attempts to circumvent taxes (Beyene & Lakew, 2019).

This study is anchored on the deterrence theory. The theory explores the connection between the deterrence efficacy of penalties and the negative impacts and feedback from individual stakeholders. It also showed that humans do not choose to carry out an action because of the variations between the cost and gain. Instead, they choose to carry out a certain action because of the expected variance in the motivating variables. This means that a person is treated as a human being who has always chosen the means that will yield the most expected utility from their behaviour or inactions (Alshrouf, 2019).

Methodology

This paper applied survey research design. The population of the research involved the staffer of Federal Inland Revenue Services and Osun State Internal Revenue Services and the private sector people totaling 100 which were randomly sampled. This study adopted use of primary data which was generate through the administration of self – developed questionnaire which was ranked with five point Likert scale that is Strongly Agree (AS), Agree (A), Undecided (UD), Strongly Disagree (SD) and Disagree (D) in order to examine the influence of adoption of technology on tax audit in Nigeria. Out of 100 copies of questionnaire distributed only 75 were fully completed and returned.

Results and Discussion

This section covers presentation, analysis of data and discussion of findings. The analysis ranges from the demographic and background characteristics of respondents, descriptive statistics of the variables such as Tax audit (dependent variable) which consists of the constructs such as tax compliance and revenue increase; and technology adoption (independent variable). Also presented is the reliability test, normality test, correlation analysis and simple linear regression analysis to investigate the influence of adoption of technology on tax

audit (Tax compliance, and Revenue increase). Simple linear regression was conducted to examine the influence of adoption of technology on tax compliance and revenue increase.

Demographic information

Table 1 show the demographic features of the respondents under this study. It depicts the Gender, Age, Marital status, Qualification and level of Tax knowledge.

Table 1 – Frequency Distribution of Respondents

S/No	Variable	Frequency	Percent
1	Gender		
	Male	38	51.4
	Female	36	48.6
	Total	74	100
2	Age		
	21-30	3	4.1
	31-40	25	33.8
	41-50	30	40.5
	51+	16	21.6
	Total	74	100
3	Marital Status		
	Single	11	14.9
	Married	63	85.1
	Total	74	100
4	Qualification		
	Diploma	5	6.8
	Degree	22	29.7
	Masters	72	2.7
	PhD	4	5.4
	Other	1	1.4
	ICAN/ANAN	40	54.1
	Total	74	100
5	Level of Tax Knowledge		
	Beginner	6	8.1
	Intermediate	30	40.5
	Advanced	38	51.4
	Total	74	100

Note – compiled by authors

Gender

Out of the total sample, the male gender had 38 (51.4%) while the female gender had 36 (48.6%). It must, however, be stressed that the reason for mass male respondents in the sample was not unconnected

from the point that not until recently the main duty of the female gender was to take care of the home front.

Age

The age category 21-30 was 3 (3%) this was followed by age category 31-40 with 25 (33.8%). Respondents who fell between age 41 and 50 years accounted for 30 (40.5%) while 16 (21.6%) was for age categories 51 and above. One would perceive from the table that majority of our respondents were in age bracket 41 and 50 years. This tendency might point to the fact that those who are at their physical best would be found in paid job.

Marital status

About 63 (85.1%) of respondents were married. The analysis of the responses shows that 63 (85.1%) of the respondents were married, 11 (14.9%) were single. The observation shows that most of the respondents were married. However, considering the age of our respondents, it is not surprising that most of them were married, as 40.5% of the respondents were 40 years and above.

Qualification

Our respondents on the level of education were in five classes; Diploma, Degree, Masters, PhD, others and ICAN/ANAN. About 40 (54.1%) of the respondents had ICAN/ANAN, 5 (6.8%) had Diploma while Degree and Master accounted for 22 (29.7%) and 4 (2.7%) respectively. Also, respondents with PhD accounted for about 4 (5.4%) while others had 1 (1.4%). One thing that is noticeable amongst the respondents is that majority of the them are chartered accountants.

Level of Tax Knowledge

The analysis of the responses shows that 6 (8.1%) of the respondents had beginner knowledge of taxation, 30 (40.5%) had intermediate knowledge while 38 (51.4%) had advanced knowledge of taxation. The analysis also shows that majority of the respondents had advanced tax knowledge. The observation shows that the respondents to the study are good representative of the population.

Reliability statistics analysis

Reliability is the extent of which an experiment, test or even measurement process is expected to yield the same outcome on a recurrent trial. According to Zikmund (2003), reliability simply explains the degree to which measurement tools are free from error and therefore, give a consistent result.

According to Sekaran (2013), any reliability factor that shows less than 0.60 will be considered as poor. This study used Cronbach's alpha as a measure of reliability for each variable used in analysing and interpreting the data. Hence, Table 2 shows the reliability test conducted to verify the reliability of

adoption of technology, tax compliance and revenue increase. Result of reliability test shows that our variables were reliable.

Table 2 – Test of Reliability

Variables	Items Total	Cronbach's Alpha
Technology Adoption	7	0.857
Tax Compliance	7	0.892
Revenue Increase	7	0.817

Note – compiled by authors

Descriptive statistics of variables and normality test

In furtherance of our analysis, the descriptive statistics of variables; adoption of technology, tax compliance and revenue increase which consists of mean and standard deviation were examined. According to Munro (2005), normality test may be investigated with the use of Skewness and Kurtosis. There is said to be a normal distribution if Skewness are between -2 and +2 and Kurtosis are between -7 and +7. Table 3 shows that our instruments are normally distributed.

Table 3 – Descriptive statistics of the variables

Variables	Mean	Standard Deviation	Skewness	Kurtosis
Technology adoption	4.1619	.63382	2.069	5.468
Tax Compliance	4.0108	.74237	1.906	6.784
Revenue Increase	4.1758	.62724	1.241	3.878

Note – compiled by authors

Pearson Correlation

Pearson Correlation matrix shows the direction, significant and strength of the bivariate associations amongst the variables in the study. Table 4 shows the correlation coefficient between tax audit with constructs such as tax compliance and revenue increase (dependent variables) and the adoption of technology (independent variable). It is worthy to note that correlation coefficient of 0.10, 0.30 and 0.50 is respectively referred to as low, medium and high coefficient in behavioral sciences.

Table 4 – Summary of Pearson correlation (n =75)

	Technology Adoption	Tax Compliance	Revenue Increase
Technology Adoption	1.000		
Tax Compliance	0.707**	1.000	
Revenue Increase	0.691**	0.677**	1.000

Notes: 1) compiled by authors
2) **Correlation is significant at the 0.01 level (2-tailed)

The correlation coefficient (r) values presented in Table 4 shows the strength of the relationship among variables. As depicted in Table 4, it can be

inferred from the analysis that a positive correlation exists amongst the variables of the study. Implying a positive direction of the relationship amongst the variables.

Regression Analysis

Regression analysis is used to investigate the relationship which exists between unexplained variable and explained variables. This following section discusses the influence of the explained variables of the study on unexplained variable.

Adoption of Technology and Tax Compliance

Table 5 shows the association/relationship between technology adoption and tax compliance. From the regression result in Table 5, it can be observed that adoption of technology is able to explain almost 50% of the changes in tax compliance, meanwhile about 50% of the systematic variations in tax compliance were left unexplained by the model. Based on the overall statistical significance of the model as shown by F-statistics it was observed that the model was statistically significant giving the calculated p-value of 0.000. This means that the overall model is statistically significant.

Based on the analysis in Table 5, it can be deduced that adoption of technology maintains positive influence on tax compliance (t-value of 8.532 and p-value of 0.000). The implication of the result is that adoption of technology would be able to positively influence tax compliance.

Table 5 – Result of regression analysis (Dependent variable = Tax Compliance)

Variables	Coefficient	t – value	P – value
TECH	0.707	8.532	0.000
Number of respondents		75	
F (1, 73)		72.789	
R ²		0.499	
Adjusted R ²		0.492	
Prob > F		0.000	

Notes: 1) compiled by authors
2) Coefficient is significant at 0.01 and 0.05
3) TECH = Technology Adoption

Table 6 – Result of regression analysis (Dependent variable = Revenue Increase)

Variables	Coefficient	t – value	P – value
TECH	0.738	8.170	0.000
N		75	
F (1, 73)		66.744	
R ²		0.691	
Adjusted R ²		0.470	
Prob > F		0.000	

Notes: 1) compiled by authors
2) Coefficient is significant at 0.01 and 0.05
3) TECH = Technology Adoption

Adoption of technology and Revenue Increase

Table 6 shows the association/relationship between adoption of technology and Revenue Increase. From the regression result in Table 6, it can be observed that adoption of technology is able to explain about 69% of the changes in revenue increase while about 31% of the systematic variations in revenue increase were left unexplained by the model. It can be deduced that adoption of technology has a strong positive influence on revenue increase. The result implies that there are other factors which may be used to enhance revenue increase. Based on the overall statistical significance of the model as shown by F-statistics it was observed that the model was statistically significant with the calculated p-value of 0.000. This means that the overall model is statistically significant.

Based on the analysis in Table 6, it can be deduced that adoption of technology maintains positive influence on revenue increase (t-value of 8.170 and p-value of 0.000).

The above result is line with the findings of Pinto, (2018); OECD, (2019) who concluded that digitisation impact positively on tax policy and tax administration

Conclusion and Recommendations

In view of the precarious situation of Nigeria in term of its inability to finance it infrastructure for sustainable development and wellbeing of its citizen, and government effort to raise fund this work has demonstrated that technology has significant influence on tax compliance and revenue increase and that technology is positively related to both tax compliance and revenue increase.

Therefore, it is recommended that government should invest heavily on technology and ensure that tax law is reviewed to reduce tax evasion to the for the barest minimum for the purpose revenue increase. It also of utmost importance that there is need for prompt completion of every tax audit as at when due and ensure that tax disputes are resolved without wasting time.

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MODELS OF LABOR MARKETS IN DEVELOPED COUNTRIES AND KAZAKHSTAN: A COMPARATIVE ANALYSIS

For successfully solving the problem of entering Kazakhstan among the 30 developed countries of the world, a decisive transition to an innovative economy and the adoption of measures to modernize the labor market are required. Under “modernization of the labor market” it is proposed to understand the modernization in accordance with the latest scientific achievements, new requirements and norms in this area, adopted in the leading developed countries.

The purpose of the article is to select the option of modernizing the labor market in Kazakhstan based on the analysis of labor market models of the leading developed countries of the world.

The main directions of scientific research are determining the relationship between the models of socio-economic development of countries and their labor markets, identifying the features of labor market models, identifying of factors affecting the efficiency of the labor market and, accordingly, on the position of countries in the world according to the global competitiveness index (GCI).

Scientific and practical significance of the work: different interpretation of the concept of “modernization of the labor market” is given, which led to comparative analysis of models of labor markets in developed countries and Kazakhstan. The methods of grouping, correlation and regression analysis were applied. The study of the relationship between GDP, employment, average wages and labor productivity allowed to characterize the features of the functioning of labor markets. The research results made it possible to concretize and systematize measures to modernize the labor market. The labor market modernization project should become an integral part of the program of economic reforms in the country.

Key words: labor market models, developed countries, Kazakhstan, the impact of the labor market on the country's competitiveness.

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Дамыған елдер мен Қазақстанның еңбек нарықтарының модельдері: салыстырмалы талдау

Қазақстанның әлемнің дамыған 30 елінің қатарына кіру мәселесін ойдағыдай шешу үшін инновациялық экономикаға көшу және еңбек нарығын жаңарту бойынша шешуші шаралар қабылдау қажет. «Еңбек нарығын модернизациялау» дегеніміз алдыңғы қатарлы дамыған елдерде қабылданған ғылымның соңғы жетістіктеріне, осы саладағы жаңа талаптар мен нормаларға сәйкес еңбек нарығын жаңартуды білдіреді.

Мақаланың мақсаты – әлемнің алдыңғы қатарлы дамыған елдеріндегі еңбек нарығы модельдерін талдау негізінде Қазақстанның еңбек нарығын жаңарту нұсқасын таңдау.

Ғылыми зерттеудің негізгі бағыттары: елдердің әлеуметтік-экономикалық даму модельдері мен олардың еңбек нарықтары арасындағы байланысын; еңбек нарығы модельдерінің ерекшеліктерін; еңбек нарығының тиімділігіне және жаһандық бәсекеге қабілеттілік индексіне (GCI) сәйкес әлемдегі елдердің позициясына әсер ететін факторларды анықтау.

Жұмыстың ғылыми және практикалық маңыздылығы – авторлар дамыған елдер мен Қазақстандағы еңбек нарықтарының модельдерін салыстырмалы талдауға алып келген «еңбек нарығын модернизациялау» тұжырымдамасына өзіндік түсініктеме береді. Топтастыру, корреляция және регрессиялық талдау әдістері қолданылды. ЖІӨ, жұмыспен қамту, орташа жалақы және еңбек өнімділігі арасындағы байланысты зерттеу еңбек нарығының жұмыс істеу ерекшеліктерін сипаттауға мүмкіндік берді, ал зерттеу нәтижелері еңбек нарығын модернизациялау жөніндегі шараларды нақтылауға және жүйелеуге мүмкіндік берді. Еңбек нарығын модернизациялау жобасы елдегі экономикалық реформалар бағдарламасының ажырамас бөлігі болуы керек.

Түйін сөздер: еңбек нарығының модельдері, дамыған елдер, Қазақстан, еңбек нарығының елдің бәсекеге қабілеттілігіне әсері.

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Модели рынков труда развитых стран и Казахстана: сравнительный анализ

Для успешного решения задачи по вхождению Казахстана в число 30-ти развитых государств мира необходим решительный переход на инновационную экономику и принятие мер по модернизации рынка труда. Под «модернизацией рынка труда» предлагается понимать осовременивание рынка труда в соответствии с новейшими достижениями науки, новыми требованиями и нормами в этой области, принятыми в ведущих развитых странах.

Цель статьи – выбор варианта модернизации рынка труда Казахстана на основе анализа моделей рынков труда ведущих развитых стран мира.

Основные направления научного исследования: определение связи между моделями социально-экономического развития стран и их рынков труда; выявление особенностей моделей рынков труда; выявление факторов, влияющих на эффективность рынка труда и соответственно на позиции стран в мире по индексу глобальной конкурентоспособности (GCI).

Научная и практическая значимость работы – дается своя трактовка понятия «модернизация рынка труда», что обусловило проведение компаративного анализа моделей рынков труда развитых стран и Казахстана. Также применены методы группировки, корреляционно-регрессионного анализа. Изучение зависимости между ВВП, занятыми, средней заработной платой и производительностью труда позволило охарактеризовать особенности функционирования рынков труда. Результаты исследования дают возможность конкретизировать и систематизировать меры по модернизации рынка труда. Проект модернизации рынка труда должен стать составной частью Программы экономических реформ в стране.

Ключевые слова: модели рынка труда, развитые страны, Казахстан, влияние рынка труда на конкурентоспособность страны.

Introduction

The projected decrease in the growth rates of the world economy and oil prices will negatively affect the dynamics of the development of the Kazakhstan economy. President of Kazakhstan K-Zh. Tokayev (2020) sets the task of creating a truly diversified, technologically advanced economy, which must work to improve the well-being of the people. In Kazakhstan, certain steps are being taken to switch to a new model of economic growth based on accelerated technological modernization of its economy. In this regard, it is necessary to critically comprehend the current model of the labor market, which has shown its ability to flexibly adapt to shocks in the context of a raw material-oriented model of the country's economic development. The restoration of equilibrium in the labor market took place mainly due to the adjustment of wages and this was one of its main features. High flexibility of wages was provided by the established institutional properties of the Kazakhstani labor market.

In the new conditions, the problem of increasing the efficiency of the national labor market becomes especially relevant, and the modernization of the labor market becomes one of the strategic goals of socio-economic policy. Modernization of the labor

market means modernizing the labor market in accordance with the latest scientific achievements, new requirements and norms in this area, adopted in the leading developed countries. It will support positive structural shifts in the Kazakhstan's economy, bringing it closer to the characteristics of the economies of highly developed countries of the world. A modernized labor market can be as much a stimulating factor for economic growth as in developed countries.

In this article, the authors proceeded from the assumption (thesis) that identifying the features and quantifying the action of the mechanisms of the labor market in developed countries have decisive importance in choosing specific measures to modernize the labor market in Kazakhstan. In this regard, for comparative analysis, the well-known and most widely used models of labor markets in developed countries were selected. To characterize them, we studied the correlations between the indicators of GDP, employment, wages, and labor productivity. Subsequently, the impact of the efficiency of the labor market on the positions of countries in the world according to the GCI criterion was analyzed. Comparative analysis showed that Kazakhstan, in terms of the characteristics of the labor market, is striving to gradually approach the developed European countries, nevertheless, today

the differences between their labor markets are quite large.

On the basis of processing a large empirical material, emerging patterns, new approaches and main directions of reforming the labor market in developed countries are revealed. When choosing the option to modernize the labor market in Kazakhstan, it is important to pay special attention to those measures that ultimately led them to success.

Literature Review

A huge amount of scientific and educational literature is devoted to the study of models of labor markets in different countries. Based on the purpose of our research, we studied works by Klein (2012), Lehmann & Muravyev (2013), Eichhorst et al. (2010), Standing (2011), Kudrov (2011), Gimpelson et al. (2017), Shaukenova (2017) in more detail. But the main focus was on official documents and research on labor market reform and employment policy and their implementation in the practice of developed countries. Thus, the documents of the Amsterdam Summit (1997) for the first time speak of the importance and necessity of coordinating national employment policies of the EU countries. In the documents of the Lisbon Summit (2007), the developed countries of the European Union are already working out a common employment policy. It involves the rejection of the escalation of spending on social and labor activities and increasing the competitiveness of European countries by achieving higher levels of labor productivity. At the same time, attention is drawn to the sequestration of passive policy programs in the labor market with a tightening of the unemployment insurance system, liberalization of labor legislation, leading to the simplification of procedures for hiring and firing. The Joint Employment Report (JER) (2015) emphasized that the goal of the European Employment Strategy is to increase the number and quality of jobs in the EU.

World Development Report of World Bank (2019) rightly points out that a more restrictive approach to labor regulation does not fit well with the labor markets of many developing countries. Three unresolved problems of labor market regulation are pointed out: regulation applies only to workers in the formal sector; the government's attempt to solve the problem of imperfection of the labor market with the help of labor legislation; labor legislation often slows down the dynamics of economic development. In this regard, the need to assess the rigid and outdated labor laws is emphasized. A

balanced approach to labor market regulation will ensure a more effective achievement of goals such as increasing productivity and social equity.

The work of the International Labor Organization (2016) presented a methodology for analyzing the labor market, which is based on identifying and quantifying not only the best practices in the labor market, but also inefficiency. According to the authors, this is the first step in developing an employment policy aimed at improving the welfare of workers while promoting economic growth. And the proposed 17 Key Indicators (KILM) can serve as a tool for monitoring and evaluating many pressing problems related to the functioning of labor markets. Based on the study of these and other sources, the authors of this article made an attempt to develop their own methodology for comparative analysis of models of labor markets in developed countries and Kazakhstan, assessing their effectiveness and impact on the competitiveness of countries.

Methodology

When choosing a comparative analysis methodology, the authors proceeded from an important methodological approach that the formation of a particular model of the labor market depends on the choice of priorities in the national economy and the degree of involvement in the world economy. This methodological approach to the study of labor markets makes it possible to assess not only the impact of macroeconomic development on the nature of labor relations, but also to substantiate the possibilities and directions of their development.

Differences in development results demonstrated by the analyzed countries are due to some extent to the labor market patterns in which they differ.

To characterize labor market models, we use the study of the correlation between the indicators of GDP, employment (unemployment), wages, and labor productivity. As known, in economic theory, wages are linked to the indicator of marginal productivity. But since the latter is not amenable to direct measurement, labor productivity is defined by us as the value of GDP per one employed. The indicator of the average nominal wage is used as the main option for remuneration. With regard to Kazakhstan, in some cases, the indicator of real average wages is used, since the gap between nominal and real wages is significant due to the high value of the consumer price index.

The next stage of the analysis is to determine the impact of the efficiency of the labor market

of developed countries on their position in the world according to the criterion of the global competitiveness index (GCI). This allows both developed countries to be compared with each other, and a comparative analysis between them and Kazakhstan. The final step of the analysis is to identify those factors that ensured the high value of the efficiency of labor markets and high positions in the ranking of countries in the world economy. For Kazakhstan, the lag in the values of these factors can serve as a clear signal for the development and implementation of specific measures to modernize the labor market.

To conduct a comparative analysis, statistical data from following sources were used: OECD data for 2000-2019, data of the Bureau of National Statistics of Agency for Strategic planning and reforms of the Republic of Kazakhstan for 2000-2019, data from the Global competitiveness reports of the World Economic Forum for 2008-2019, data from the Global innovation index 2019 and Index of Economic Freedom 2020.

The results of our comparative analysis methodology support the hypothesis that differences in development performance across countries are largely due to the labor market patterns in which they differ. The main dividing line between the development models of different countries is the degree of state intervention in the functioning of the labor market. The question is to make the right choice of the ratio between the mechanism of self-regulation of the market and methods of state regulation, depending on the state of the economy of a particular country. The results of the study show the need for a decisive transformation of the economic model of Kazakhstan into a more

effective one, characterized by moving away from rent-seeking behavior and increasing role of market incentives. The study of the impact of labor market models in developed countries on the dynamics of development of their economies makes it possible to modernize the labor market in Kazakhstan in such a way as to enhance their positive impact on economic growth.

Results and discussion

Comparative analysis of labor market models in developed countries and Kazakhstan

A comparative analysis of labor market models in developed countries and Kazakhstan was carried out in the following sequence:

- determination of the range of developed countries with different labor market models;
- determination of the correlation dependence between the main indicators, quantitatively characterizing the labor market models inherent in these countries;
- determination of social and economic results achieved by developed countries;
- identification of the relationship between the above indicators.

In countries with market economies, there is a wide variety of labor market models. For a comparative analysis, we have taken six developed countries that represent the most famous models of labor markets: Anglo-Saxon, Continental, Japanese and Swedish.

First of all, it is necessary to consider the dynamics of indicators of GDP per capita, average wage, labor productivity and unemployment rate (Table 1, Figure 1).

Table 1 – Comparison of GDP per capita, labor productivity and average wages in developed countries and Kazakhstan, %

Country	2000	2005	2007	2008	2009	2010	2015	2016	2017	2018	2019
GDP per capita											
USA	100	100	100,0	100	100	100,0	100,0	100,0	100,0	100,0	100,0
UK	72,8	74,0	73,9	75,8	74,5	74,4	74,2	74,3	75,1	72,8	74,8
Germany	75,6	73,2	77,3	79,6	79,7	82,5	84,6	86,4	88,0	86,0	86,4
France	71,9	69,3	71,2	72,7	73,8	74,2	72,0	72,8	73,8	72,3	75,4
Japan	73,9	71,9	72,0	72,0	70,6	72,3	71,3	71,2	70,2	68,5	66,4
Sweden	81,6	77,7	84,8	87,3	85,7	86,0	85,4	84,9	86,0	84,5	85,7
Kazakhstan	3,4	8,6	14,1	17,6	15,2	18,7	18,5	13,3	15,1	15,1	15,1
Labor productivity											
USA	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Continuation of table 1

Country	2000	2005	2007	2008	2009	2010	2015	2016	2017	2018	2019
UK	75,9	74,5	75,0	75,8	72,7	72,0	71,7	72,1	73,0	71,0	73,2
Germany	82,4	78,4	79,8	79,6	75,9	78,2	79,6	80,6	82,1	80,8	81,1
France	86,2	83,8	86,2	86,1	84,7	84,2	84,1	85,6	86,6	85,1	89,7
Japan	70,5	69,2	69,4	68,7	65,2	66,0	65,5	65,4	64,1	61,8	59,7
Sweden	84,4	77,5	82,7	83,6	80,6	80,1	80,2	80,3	81,0	79,8	82,2
Kazakhstan	3,9	8,6	13,9	16,8	14,1	16,9	17,9	13,0	14,9	15,1	15,2
Average wages											
USA	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
UK	71,8	77,3	78,3	77,0	76,6	76,5	71,0	71,5	71,1	71,0	71,7
Germany	82,9	80,7	74,8	78,3	77,7	74,7	77,3	78,4	78,4	79,0	81,5
France	70,1	71,6	68,9	70,2	71,8	71,3	70,4	71,1	70,9	70,5	70,6
Japan	69,6	65,9	68,0	63,3	62,2	67,5	63,7	64,8	64,6	64,3	58,7
Sweden	63,1	65,8	66,8	69,1	68,8	67,5	69,5	70,4	70,1	70,0	70,9
Kazakhstan	2,2	5,4	8,8	10,2	9,2	10,6	11,0	8,1	8,9	9,0	8,9

Note – compiled by authors based on data from OECD and Bureau of National Statistics of the Republic of Kazakhstan

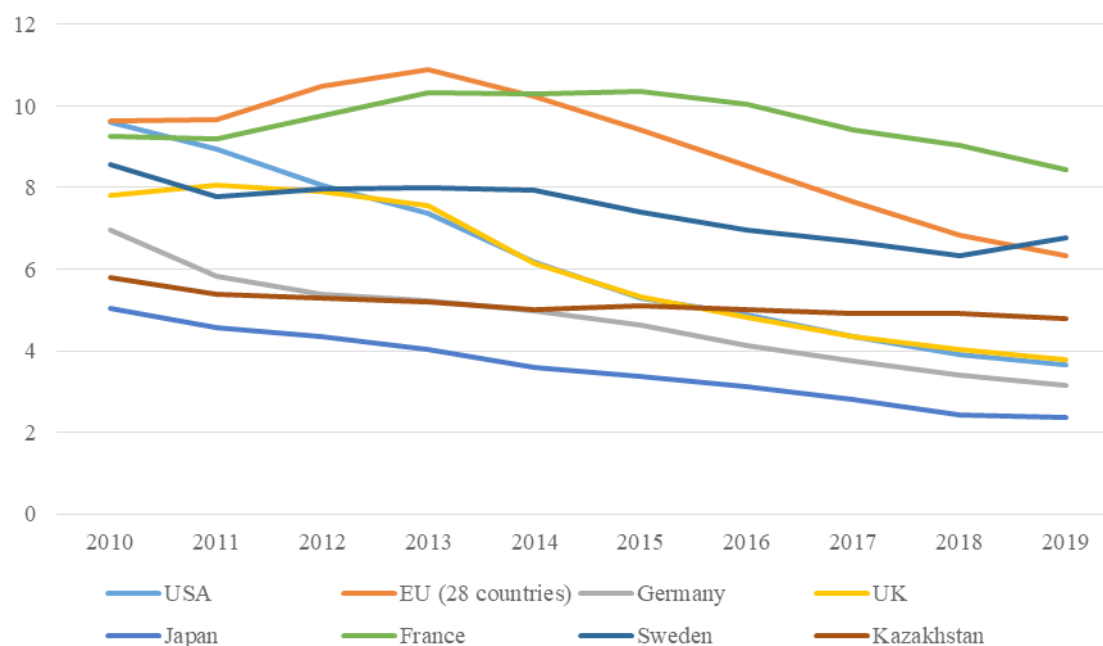


Figure 1 – Dynamics of unemployment in the leading developed countries and in Kazakhstan over 10 years

Note – compiled by authors based on data from OECD and Bureau of National Statistics of the Republic of Kazakhstan

Traditionally, the indicator of GDP per capita is recognized as the main criterion that determines the level of the country's economic development. The leading country among the countries we are considering is the United States. Therefore, data on the levels of GDP per capita, labor productivity and average wages of individual countries are expressed

as a percentage of the levels of similar indicators in the United States.

As can be seen from Table 1, developed countries differ noticeably in these indicators, while Kazakhstan lags significantly behind them. Undoubtedly, such a large gap between developed countries is primarily due to the scale

of companies' expenditures on research and development, the ability of countries to innovate, and the pace of introduction of new technologies. But it is difficult not to notice the impact of the degree of state intervention in the economy and social development processes of the country, which plays a key role in the manifestation of the features of the named labor market models. Hence, the authors hypothesize that the differences in development results demonstrated by the analyzed

countries are due to a certain extent to the labor market models, according to which they differ. To substantiate this hypothesis, we first considered each of the labor market models through the study of the relationship between the main indicators – GDP, wages and labor productivity. Table 2 shows the correlation between GDP, employment, average wages and labor productivity in the United States, calculated using the STATA statistical software package.

Table 2 – Correlation between GDP, employment, average wages and labor productivity in the USA

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,848***	0,466**	0,333
	p		0,000	0,038	0,152
	N		20	20	20
Employment	Pearson Correlation	0,848***	1	0,338	-0,218
	p	0,000		0,145	0,357
	N	20		20	20
Wages	Pearson Correlation	0,466**	0,338	1	0,256
	p	0,038	0,145		0,276
	N	20	20		20
Productivity	Pearson Correlation	0,333	-0,218	0,256	1
	p	0,152	0,357	0,276	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

As we can see from the data in Table 2, the correlation between GDP and employment is strong and significant at the 1% level ($r = 0.848$, $p < 0.01$), and there is an average correlation between GDP and average wages, which is significant at the 5% level ($r = 0.466$, $p < 0.05$). The relationship between the other variables is weak and insignificant.

The statistics presented in Table 1 show that the United States, due to its models of socio-economic development and labor market, is significantly ahead of other countries in all indicators. The American model of socio-economic development is focused on minimizing state participation in the production of goods and services, on deregulating its economy. The main task of the state is to ensure the conditions for private competition and conduct a tough antimonopoly policy. The model is based on equity capital and the source of investment is the stock market. The focus on accelerating technological progress has made the American

economy the leader in the world in terms of innovation (Kudrov, 2011).

The American model is characterized by the decentralization of the labor market and legislation on employment and social security. It guides the employee towards achieving personal success and self-realization, and his salary depends on the qualifications and complexity of the work he does. The employers' labor market strategy is aimed at reducing labor costs by curbing wages and curtailing certain social obligations. Reducing labor costs and reducing unemployment are achieved through the expansion of part-time and temporary workers.

The researchers also note the dynamism of the American labor market, leadership in the world in terms of the number of jobs created annually that require more skilled labor. On the macroeconomic level, the state does not stimulate aggregate demand as a means of expanding employment; it fundamentally limits its role in material support

of the population, caring only about the poorest strata of the population. But at the same time, it is looking for new approaches in employment policy, which are expressed in methods of containing labor costs, job rotation, and increasing labor market flexibility (Kudrov, 2011). As a result of consistent implementation of such a policy for a ten-year period

(2010-2019), the average annual growth amounted to: GDP – 2.3%, average wages – 1.0%, labor productivity – 1.1%. In 2019, the unemployment rate in the country reached a low level of 3.7%.

The closest to the American one is the socio-economic model of Great Britain, which differs significantly from the general European one (Table 3).

Table 3 – Correlation between GDP, employment, average wages and labor productivity in the UK

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,762***	0,503**	0,893***
	p		0,001	0,024	0,000
	N		20	20	20
Employment	Pearson Correlation	0,762***	1	0,28	0,389*
	p	0,001		0,231	0,09
	N	20		20	20
Wages	Pearson Correlation	0,503**	0,28	1	0,516**
	p	0,024	0,231		0,02
	N	20	20		20
Productivity	Pearson Correlation	0,893***	0,389*	0,516**	1
	p	0,000	0,09	0,02	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

The correlation between GDP and employment, GDP and labor productivity is strong and significant at the 1% level ($r = 0.762$, $p < 0.01$; $r = 0.893$, $p < 0.01$), and between GDP and average wages, labor productivity and average wages is an average correlation that is significant at the 5% level ($r = 0.503$, $p < 0.05$; $r = 0.516$, $p < 0.05$). The relationship between labor productivity and employment is moderate and significant at the 10% level ($r = 0.389$, $p < 0.1$). The relationship between average wages and employment is weak and insignificant.

The Anglo-Saxon model assumes a predominantly passive nature of the state employment policy, a high share of private enterprises and public organizations in the provision of social services. In 1980-1990 there was implemented the policy of deregulating the economy in the country: many administrative and legal restrictions on business, control over the labor market, wages, dividends and certificates for industrial construction was abolished. The financial

and banking system underwent liberalization and deregulation, and the London Stock Exchange was reorganized.

As a result, in 2020, the UK took the highest 7th position among comparable countries in terms of the Index of Economic Freedom out of 180 countries: USA – 17, Sweden – 22, Germany – 27, Japan – 30, Kazakhstan – 39, France – 64th position. According to researchers, the current UK employment regulation model has become more efficient. A feature of the British labor market was that in 2019 only 5.2% of employees were temporarily employed, on average in OECD countries this indicator was 11.8%. Over a ten-year period (2010-2019), the average annual growth was: GDP – 1.8%, average wages – 0.3%, labor productivity – 0.7%. The unemployment rate dropped to 3.8%, which is almost 1.7 times less than the average for the European Union.

The German model (Table 4) is of the greatest interest, since the Kazakhstan's labor market model is closest to it in many aspects.

Table 4 – Correlation between GDP, employment, average wages and labor productivity in Germany

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,394*	0,257	0,873***
	p		0,086	0,275	0,000
	N		20	20	20
Employment	Pearson Correlation	0,394*	1	0,151	-0,105
	p	0,086		0,527	0,661
	N	20		20	20
Wages	Pearson Correlation	0,257	0,151	1	0,198
	p	0,275	0,527		0,402
	N	20	20		20
Productivity	Pearson Correlation	0,873***	-0,105	0,198	1
	p	0,000	0,661	0,402	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

The correlation between GDP and labor productivity is strong and significant at the 1% level ($r = 0.873$, $p < 0.01$), while there is a moderate correlation between GDP and employment, which is significant at the 10% level ($r = 0.394$, $p < 0.1$). The relationship between the other variables is weak and insignificant.

The most acute problem in Germany in the early 2000s was the state's social policy, which manifested itself most of all in the field of social and labor relations. According to statistics from OECD countries, the share of production costs of the general government sector in Germany's GDP is 22.93% (2017), which is higher than in other developed countries, especially in Anglo-Saxon countries (USA – 18.31%, Great Britain – 20.73%). As the researchers emphasize, the inflexible labor market and the weakening of the competition mechanism contributed to the establishment of wages above the equilibrium level, which reduced the attractiveness of German enterprises in the eyes of investors (Kudrov, 2011).

It was necessary to reduce the degree of overcrowding of the economy with social spending. G. Schroeder's government took a decisive step and initiated the development of a package of social reforms "Hartz 4". The results of the implementation of the social reform had a positive effect on the observance of the optimal balance between business and its competitiveness, on the one hand, and social well-being and the social state, on the other. These and other organizational and managerial foundations of labor market regulation led to a reduction in unemployment even during the

crisis of 2008-2009: with a 5.6% decline in GDP, the number of employed decreased by only 0.2%; the response of employment in comparison with the magnitude of the decline in production was rather weak. Over a ten-year period (2010-2019), the average annual growth was: GDP – 2.0%, average wages – 1.5%, labor productivity – 1.0%. In 2019, the unemployment rate was 3.2%.

Under the influence of shifts in the structures of national economies and employment, Western European countries began to make appropriate changes in the sphere of labor relations. In this regard, France has lagged far behind in implementing labor market reform (Table 5).

The correlation between GDP and labor productivity is strong and significant at the 1% level ($r = 0.643$, $p < 0.01$), between GDP and employment is average and significant at the 5% level ($r = 0.522$, $p < 0.05$), and between GDP and average wages is moderate inverse relationship, which is significant at the 10% level ($r = -0.423$, $p < 0.1$). The relationship between the other variables is weak and insignificant.

The French socio-economic model is also characterized by significant direct participation of the state in the economy. In France, the dirigalistic socio-economic model still prevails. The public sector and government regulation are more represented, market mechanisms are weaker than in the UK and Germany. According to the competitiveness ranking, France in 2019 took 15th place in the world, and according to this indicator it was inferior to Great Britain – 9th place, and Germany – 7th place.

Table 5 – Correlation between GDP, employment, average wages and labor productivity in France

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,522**	-0,423*	0,643***
	p		0,018	0,063	0,000
	N		20	20	20
Employment	Pearson Correlation	0,522**	1	-0,333	-0,319
	p	0,018		0,152	0,171
	N	20		20	20
Wages	Pearson Correlation	-0,423*	-0,333	1	-0,177
	p	0,063	0,152		0,454
	N	20	20		20
Productivity	Pearson Correlation	0,643***	-0,319	-0,177	1
	p	0,000	0,171	0,454	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

The President of the country E. Macron began the implementation of the liberal course of economic policy with reforms in the labor market. In September 2017, he signed five decrees on the reform of the labor code, the main provisions of the reform entered into force in January 2018. According to them, private companies are given more freedom in internal matters, employers are allowed to increase the number of working hours, and a simplified procedure is created for dismissing workers. The reform made it possible for businesses to more quickly and easily regulate the number of employees and change the organization of labor depending on the conjuncture. According to President, after

the liberalization of the labor market, new jobs will be created, unemployment will decrease and economic growth will accelerate (Euro indicators, 2018). The results of the two years after the reform indicate that measures to reform the labor market are gradually positively affecting the GDP growth rates, and a high level of labor productivity remains. Over a ten-year period (2010-2019), the average annual growth was: GDP – 1.4%, average wages – 0.8%, labor productivity – 0.8%. While the country's unemployment rate is slowly declining, in 2019 it remained more than 2.6 times higher than in neighboring Germany.

The model of Sweden is adjacent to the German socio-economic model (Table 6).

Table 6 – Correlation between GDP, employment, average wages and labor productivity in Sweden

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,465**	0,423*	0,826***
	p		0,039	0,063	0,000
	N		20	20	20
Employment	Pearson Correlation	0,465**	1	0,211	-0,116
	p	0,039		0,372	0,627
	N	20		20	20
Wages	Pearson Correlation	0,423*	0,211	1	0,339
	p	0,063	0,372		0,143
	N	20	20		20

Continuation of table 6

		GDP	Employment	Wages	Productivity
Productivity	Pearson Correlation	0,826***	-0,116	0,339	1
	p	0,000	0,627	0,143	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

The correlation between GDP and labor productivity is strong and significant at the 1% level ($r = 0.826$, $p < 0.01$), between GDP and employment is average and significant at the 5% level ($r = 0.465$, $p < 0.05$), and between GDP and average wages is average and significant at the 10% level ($r = 0.423$, $p < 0.1$). The relationship between the other variables is weak and insignificant.

Researchers note high share of the public sector in the Swedish economy, it accounts for a third of those employed in the country's economy; total government spending in 2017 amounted to 49.33% of GDP. However, Sweden has achieved a higher efficiency of competitive economy: according to the GCI indicator, the country is ranked 8th position. State intervention in the economy does not directly affect the production activities of enterprises, but is primarily aimed at regulating the labor market and social security of the entire population. It should also be emphasized that in Sweden the vast majority of workers are members of labor unions, workers are more actively involved in the management of

production at their enterprises. Much attention is paid to collective agreements between labor unions and employers. However, the excessive socialization of the economy began to negatively affect its growth and the country's competitiveness. Therefore, the problem of adjusting the Swedish model also began to come to the fore. Over a ten-year period (2010-2019), the average annual growth was: GDP – 2.5%, average wages – 1.3%, labor productivity – 1.1%. The unemployment rate in Sweden in 2019 was 6.8%.

The researchers emphasize that the Japanese socio-economic model, which incorporated many elements of the Anglo-Saxon model, over time began to lose its effectiveness. This was evident from the above data on economic growth rates and labor productivity. This was facilitated by excessive state intervention in the economy, the creation of keiretsu, as well as the inadmissibility of foreign capital (Kudrov, 2011), which accordingly affected the dependencies of the indicators we are considering (Table 7).

Table 7 – Correlation between GDP, employment, average wages and labor productivity in Japan

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,377	0,319	0,904***
	p		0,101	0,17	0,000
	N		20	20	20
Employment	Pearson Correlation	0,377	1	0,351	-0,056
	p	0,101		0,129	0,815
	N	20		20	20
Wages	Pearson Correlation	0,319	0,351	1	0,18
	p	0,17	0,129		0,447
	N	20	20		20
Productivity	Pearson Correlation	0,904***	-0,056	0,18	1
	p	0,000	0,815	0,447	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

The correlation between GDP and labor productivity is strong and significant at the 1% level ($r = 0.904$, $p < 0.01$). The relationship between the other variables is weak and insignificant.

The features of the Japanese model of the labor market are well known, which provide employment guarantees for employees throughout their working life, an increase in all types of payments depending, first of all, on the length of service, provided that employees comply with certain efficiency standards. Consolidation between labor and capital is achieved by addressing specific social issues at the enterprise level, employees are aware of the problems and income of the firm. The labor relations system in Japan helps reduce labor

costs through intra-enterprise or inter-enterprise movement. The enterprises themselves are engaged in the employment of the laid off workers of large enterprises.

The Japanese economy has been stagnating for a long time. The average annual GDP growth over twenty years (2000-2019) was only 0.9%. Over a ten-year period (2010-2019), the average annual growth was: GDP – 1.3%, average wages – 0.4%, labor productivity – 0.6%. At the same time, the unemployment rate in Japan remains very low – 2.4% in 2019.

The correlation dependence between GDP, employment, real wages and labor productivity in the economy of Kazakhstan is presented in Table 8.

Table 8 – Correlation between GDP, employment, average real wages and labor productivity in Kazakhstan

		GDP	Employment	Wages	Productivity
GDP	Pearson Correlation	1	0,607***	0,795***	0,823***
	p		0,005	0,000	0,000
	N		20	20	20
Employment	Pearson Correlation	0,607***	1	0,433*	0,048
	p	0,005		0,057	0,84
	N	20		20	20
Wages	Pearson Correlation	0,795***	0,433*	1	0,689***
	p	0,000	0,057		0,0008
	N	20	20		20
Productivity	Pearson Correlation	0,823***	0,048	0,689***	1
	p	0,000	0,84	0,0008	
	N	20	20	20	

Notes: 1) compiled by authors
2) *, **, *** – the significance of the coefficients at 10%, 5% and 1% levels, respectively

The correlation between GDP and employment, GDP and average real wages, GDP and labor productivity, labor productivity and average real wages is strong and significant at the 1% level ($r = 0.607$, $p < 0.01$; $r = 0.795$, $p < 0.01$; $r = 0.823$, $p < 0.01$; $r = 0.689$, $p < 0.01$), and there is an average correlation between the average real wages and employment, which is significant at the 10% level ($r = 0.433$, $p < 0.1$). The relationship between labor productivity and employment is weak and insignificant.

Over a ten-year period (2010-2019), the average annual growth was: GDP – 4.5%, average real wages – 3.2%, labor productivity – 3.4%. The unemployment rate in 2019 was 4.8%. Despite

these indicators, progress in promoting the country is not observed due to insufficient economic growth, labor productivity and wages. At the same time, the achieved relatively low level of official unemployment cannot be a reason for weakening attention to the problems of the labor market. On the contrary, the approach that gives priority to this indicator in assessing the success of the current socio-economic policy should be revised.

It is clear that low unemployment was achieved due to low wages and labor productivity. Meanwhile, the achievement of high rates of productivity growth due to accelerated technological modernization of all sectors of the economy, and not only due to individual sectors of the manufacturing industry,

can give the proper dynamics to the development of the economy. The experience of developed countries shows that in the long term, the introduction of new technology has a positive effect on their economic growth and an increase in the standard of living of the population. Simultaneously with it, the modernization of the country's labor market should be carried out in order to increase its functioning efficiency and additional influence on economic growth.

Impact of labor market efficiency on the competitive position of countries

Success in socio-economic development can be seen by the rank of a country, which is determined based on the criterion of the Global Competitiveness Index (GCI). Below we have made an attempt to find a possible relationship between the ranks of countries according to the GCI criterion and the efficiency of the labor market (Table 9).

Table 9 – Position of countries in the world economy by GCI and labor market efficiency

Country	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
1	2	3	4	5	6	7	8	9	10	11
USA:										
<i>GCI</i>	1	2	4	5	7	5	3	3	3	2
<i>Labor market efficiency</i>	1	3	4	4	6	4	4	4	4	3
UK:										
<i>GCI</i>	12	13	12	10	8	10	9	10	7	8
<i>Labor market efficiency</i>	8	8	8	7	5	5	5	5	5	6
Germany:										
<i>GCI</i>	7	7	5	6	6	4	5	4	5	5
<i>Labor market efficiency</i>	58	70	70	64	53	41	35	28	22	14
France:										
<i>GCI</i>	16	16	15	18	21	23	23	22	21	22
<i>Labor market efficiency</i>	105	67	60	68	66	71	61	51	51	56
Japan:										
<i>GCI</i>	9	8	6	9	10	9	6	6	8	9
<i>Labor market efficiency</i>	11	12	13	12	20	23	22	21	19	22
Sweden:										
<i>GCI</i>	4	4	2	3	4	6	10	9	6	7
<i>Labor market efficiency</i>	26	19	18	25	25	18	20	20	18	20
Kazakhstan:										
<i>GCI</i>	66	67	72	72	51	50	50	42	53	57
<i>Labor market efficiency</i>	12	18	21	21	19	15	15	18	20	35
Total countries	134	133	139	142	144	148	144	140	138	137
Note – compiled by authors based on Global Competitiveness Reports 2008-2018										

As can be seen, an improvement in a country's rank in terms of labor market efficiency almost automatically leads to an increase in its GCI rank and vice versa. This dependence is observed in almost all countries, but it is especially clearly visible in the example of Great Britain, Germany and Kazakhstan.

The practice of the leading countries shows that states with different models of the labor market can switch to a high trajectory of development. But it can also be noted that without improving the mechanism of the labor market, the development of countries can go up to a certain level. But further sustainable

economic growth is possible in countries where the labor market is undergoing modernization.

Further, a comparison is made of the extent to which over 10 years the change in the rank of labor market efficiency of countries was due to changes in its 7 subindicators (Table 10).

During the decade under review, the United States retained its high position in the top three countries of the world, Great Britain and especially Germany and Sweden have significantly moved up and entered the top ten countries. France moved up 49 places from

105th place, driven by significant improvements in the value of indicators such as cooperation in industrial relations with the employer, flexibility in determining wages, pay and productivity. But the 56th place in terms of the efficiency of the labor market, which is not typical for a developed country, is due to the deterioration in hiring and firing rates, and the country's ability to retain talent. Japan lost ground significantly, dropping from 11th to 22nd, fueled by a severe deterioration in wages and productivity, and talent retention.

Table 10 – Change in the rank of countries by labor market efficiency and its subindicators

Country	Rank by indicators:							
	Labor market efficiency	Labor market efficiency subindicators						
		01 Cooperation in labor-employer relations	02 Flexibility of wage determination	05 Hiring and firing practices	07 Pay and productivity	08 Reliance on professional management	09 Country capacity to retain talent	10 Female participation in the labor force
1	2	3	4	5	6	7	8	9
USA:								
<i>GCI 2008-2009</i>	1	16	10	6	7	10	1	29
<i>GCI 2017-2018</i>	3	14	18	5	3	13	3	56
UK:								
<i>GCI 2008-2009</i>	8	35	23	61	32	19	25	39
<i>GCI 2017-2018</i>	6	19	14	8	18	9	6	49
Germany:								
<i>GCI 2008-2009</i>	58	27	131	130	51	9	26	34
<i>GCI 2017-2018</i>	14	21	114	18	7	17	13	39
France:								
<i>GCI 2008-2009</i>	105	132	103	126	82	21	41	37
<i>GCI 2017-2018</i>	56	109	59	133	63	22	75	32
Japan:								
<i>GCI 2008-2009</i>	11	6	14	111	12	17	14	79
<i>GCI 2017-2018</i>	22	7	15	113	40	16	44	77
Sweden:								
<i>GCI 2008-2009</i>	26	5	130	102	59	1	18	8
<i>GCI 2017-2018</i>	20	8	129	90	34	7	17	14
Kazakhstan:								
<i>GCI 2008-2009</i>	12	63	44	4	33	79	57	13
<i>GCI 2017-2018</i>	35	68	105	41	50	105	80	28
Note – compiled by authors based on Global Competitiveness Reports 2008-2009, 2017-2018								

The data from the Global Competitiveness Index show that the labor markets in the United States and Great Britain are the most flexible, and the labor market in France was one of the most regulated (it can be joined by Spain, Italy and number of other countries, the data for which we do not present here). This confirms the previously stated assumption (thesis) that the excessive regulation of the labor market limits the “freedom” to conclude labor agreements on working conditions and wages, and also does not allow employers to set excessive requirements for workers.

Kazakhstan, which ranked high 12th in terms of labor market efficiency, dropped 23 positions down. The reasons are obvious from the data presented: for almost all subindicators that form the efficiency of the labor market, there was a significant deterioration in the situation. They also predetermine the choice of specific measures to modernize the labor market in Kazakhstan, which must be linked with measures for accelerated technological modernization and the development of an innovative economy in the country.

Conclusion

The results of the study confirm the possibility of choosing the option of modernizing the labor market in Kazakhstan based on the analysis of labor market models in the leading developed countries of the world. Under the influence of globalization processes and the accelerated introduction of the latest technologies, competition between countries has intensified. This prompted them to intensify their search for ways to improve the efficiency of their labor market models. The EU countries have developed coordinated policy in the field of employment and labor market regulation. Its close connection with the model of the country’s socio-economic development and the need for simultaneous modernization of the economy and reform of the labor market were recognized. The consistent implementation of the decisions made in

practice allowed the countries under consideration to maintain their high positions according to the GCI criterion in the world economy.

Kazakhstan has set the task in the foreseeable future to enter the cohort of the developed countries of the world. And as the results of our analysis show, it is necessary to intensify the development of a modern, effective model of the country’s socio-economic development. Without it, there will be no urgent need to modernize the domestic labor market. Currently, Kazakhstan is striving to approach the characteristics of the labor market of developed countries, but with the dominance of the previous model of economic development, significant differences between labor markets will most likely not be able to overcome. The values of the labor market efficiency according to the GCI methodology showed the presence of regularities reflecting the relationship between the factors characterizing the labor market and the long-term economic dynamics of the countries under consideration. At a time when the developed countries under consideration have significantly moved up in ten years on seven out of ten factors that determine the value of the labor market efficiency, Kazakhstan, on the contrary, regressed and significantly worsened its position.

A decisive transition to a new model of the country’s economic development based on accelerated technological modernization of the economy will sharply set the task of overcoming the lag in these factors, and they will give clear guidelines in which direction to develop and implement the modernization model of the labor market in Kazakhstan. The modernized labor market will become a driver of additional growth in the country’s economy.

The results obtained can be taken into account when developing a national project for the modernization of the labor market, which, in our opinion, should become an integral part of the Program for strategic planning and economic reform. They may also generate interest in emerging market economies.

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АЙМАҚТАРДЫҢ ИНТЕЛЛЕКТУАЛДЫҚ ӘЛЕУЕТІН БАҒАЛАУ: ЗЕРТТЕУДІҢ МЕТОДОЛОГИЯЛЫҚ НЕГІЗДЕРІ

Әлемдегі жаһандану және интеграциялану үрдістері салдарынан білімді қоғамның пайда болуын байқаймыз. Бұндай білімді қоғамда орнығу үшін Қазақстанда да айтылған қоғамды қалыптастыру қажеттігі туындайды. Мемлекеттің интеллектуалды даму бағытын ұсынғаннан бұрын аймақтардағы зияткерлік әлеуеттің жалпы жағдайын біліп алу қажет. Мақаланың мақсаты – тәжірибеде жүзеге асырылған зияткерлік әлеуетті бағалау әдістерін зерттеу, олардың кемшіліктері мен артықшылықтарын талқылау және Қазақстанның аймақтарындағы зияткерлік әлеуетті бағалаудың авторлық әдістемесін ұсыну. Авторлар ұсынатын интегралды көпфакторлы индекстік әдіс Қазақстан аймақтарындағы зияткерлік әлеуетті білім және ғылым, инновация және әлеуметтік әл-ауқат тұрғысынан бағалауға мүмкіндік береді. Тәжірибе жүзінде зияткерлік әлеуетін бағалау Қазақстан Республикасы аймақтарының типологиясын құрап, бағалау нәтижелері аймақтың зияткерлік әлеуетін дамыту бағыттарын анықтауға мүмкіндік береді. Теориялық тұрғыдан бұл мақала зияткерлік әлеуетті бағалау әдістемесін даярлаудың негізі бола алады. Зерттеу барысында логикалық талдау, талдау мен синтез, жүйелі тәсіл қолданылған.

Аймақтың зияткерлік әлеуетін бағалаудың әзірленген әдістемесі аймақтың инновациялық әлеуетінің деңгейін айқындауға, өңірлерді зияткерлік әлеуеттің деңгейімен салыстыруға, Қазақстан Республикасының субъектілерін облыстың зияткерлік әлеуеті деңгейімен саралауға және аймақтың адами ресурстарын тиімді пайдалануды ескере отырып, аймақтық даму бағдарламаларын жасауға мүмкіндік береді.

Түйін сөздер: зияткерлік әлеует, бағалау әдістемелері, аймақтардағы адами капитал.

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Assessment of the intellectual potential of regions: methodological foundations of the study

As a result of globalization and integration processes in the world appears a new society – a society of intellectuals. An intellectually developed society ensures the development of the state. According to the global trend, there is a need to form an educated, intelligent society in Kazakhstan. For the development of an intellectual society, it becomes necessary to assess the current state of the intellectual potential of the country and its regions. The purpose of this article is to study existing methods for assessing intellectual potential, discussing their advantages and disadvantages, as well as the development of the author's methodology for assessing the intellectual potential in the regions of Kazakhstan. The method of a complex multifactorial index proposed by the authors makes it possible to assess the intellectual potential of the regions of Kazakhstan in terms of education and science, innovation and social security. The practical significance of the article is an assessment of the current state of the intellectual potential of the country and regions and will determine the direction of the development of intellectual potential. The theoretical significance of the article provides an opportunity to serve as a basis for the development of methods for assessing the intellectual potential for Kazakhstan and its regions. The study used logical analysis, analysis and synthesis, a systematic approach.

The developed methodology for assessing the intellectual potential of the region will determine the level of the region's innovative potential, compare the regions with the level of intellectual potential, differentiate the regions of the Republic of Kazakhstan by the level of intellectual potential and develop programs for regional development.

Key words: intellectual potential, assessment methods, human capital in the regions.

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Оценка интеллектуального потенциала регионов: методологические основы исследования

В результате глобализационных и интеграционных процессов в мире появляется новое общество – общество интеллектуалов. Интеллектуально развитое общество обеспечивает развитие государства. Согласно мировой тенденции появляется необходимость формирования образованного, интеллектуального общества в Казахстане. Для развития интеллектуального общества возникает необходимость оценки текущего состояния интеллектуального потенциала страны и его регионов. Целью данной статьи является изучение существующих методов оценки интеллектуального потенциала, обсуждение их достоинств и недостатков, а также разработка авторской методики оценки интеллектуального потенциала в регионах Казахстана. Предложенный авторами метод комплексного многофакторного индекса позволяет оценивать интеллектуальный потенциал регионов Казахстана с точки зрения образования и науки, инноваций и социального обеспечения. Практическая значимость статьи представляет оценку текущего состояния интеллектуального потенциала страны и регионов и позволит определить направление развития интеллектуального потенциала. Теоретическая значимость статьи представляет возможность послужить основой для разработки методов оценки интеллектуального потенциала для Казахстана и его регионов. В исследовании использованы логический анализ, анализ и синтез, системный подход.

Разработанная методология оценки интеллектуального потенциала региона позволит определить уровень инновационного потенциала региона, сопоставить регионы с уровнем интеллектуального потенциала, дифференцировать регионы Республики Казахстан по уровню интеллектуального потенциала и разрабатывать программы регионального развития.

Ключевые слова: интеллектуальный потенциал, методы оценки, человеческий капитал в регионах.

Кіріспе

Әлемдегі өзгерістерге байланысты Қазақстан мен оның аймақтарының алдында зияткерлік әлеуетті қалыпты жағдайда сақтау және дамыту міндеті тұр. Онсыз елдің одан әрі дамуы пандемиядан кейінгі кезеңде қиыншылыққа түседі.

Зияткерлік әлеуетті белсендіру және ынталандыру арқылы Қазақстанның бәсекеге қабілеттілігін арттыруға және әлемдік экономикалық кеңістікте өзінің лайықты орнын алуға, сондай-ақ экономиканың шикізаттық ресурстарынан дайын өнім шығаруға мүмкіндік болады.

Өсіп келе жатқан технологиялық артта қалушылық және көптеген салалардағы инновацияға деген қажеттілік – Қазақстан және оның аймақтық экономикасын модернизациялау мәселелерін шешу үшін жоғары деңгейлі мамандарды дайындау бүгінгі күні заманның талабы. Сондықтан зияткерлік әлеует бұл артта қалушылықты төмендететін және тұтастай аймақтың әлеуметтік-экономикалық дамуын арттыратын көздердің бірі болып табылады.

Әлемдегі жаһандану және интеграциялану үрдістері салдарынан білімді қоғамның пай-

да болуын байқаймыз. Мұндай білімді қоғамда орнығу үшін Қазақстанда да айтылған қоғамды қалыптастыру қажеттігі туындайды. Білімді қоғамға әкелетін шешуші факторлар ретінде адамдардың ақыл-ой қабілеттері мен олардың бірнеше есе өсуін қамтамасыз ететін технологиялар саналады. Сол себепті, зерттеліп отырған жұмыстың мақсаты – тәжірибеде жүзеге асырылған зияткерлік әлеуетті бағалау әдістерін зерттеу, олардың кемшіліктері мен артықшылықтарын талқылау және Қазақстанның аймақтарындағы зияткерлік әлеуетті бағалау нәтижесін қолдану бағыттарын анықтау.

Индустрияға дейінгі қоғам табиғи және еңбек ресурстарын, өнеркәсіптік-материалдық ресурстарды пайдалану арқылы сипатталатын, ал индустриядан кейінгі қоғам адамның зияткерлігіне және ақпараттық ресурстарға екіпін жасайды. Зейін білім экономикасының элементтерінің бірі ретінде ғана емес, сонымен бірге негізгі пайда көзі ретінде де сипатталады.

Қазіргі қоғамның дамуындағы адам мен ақпараттың рөлі зияткерлік әлеуетті (адамдағы, қоғамдағы, кәсіпорындағы, аймақтағы, мемлекеттегі) арттыруға байланысты мәселелерді өзекті етеді.

Әлемдік тәжірибеге сәйкес, Қазақстандағы ағымдағы зияткерлік әлеуеттің жағдайына әсер ететін екі фактор бар, олар: білім беру деңгейі мен ғылым. Адами капиталдың даму индексында білімнің дамуы бойынша 2018 жылы Қазақстан 10 орынға ие болды. Жастардың білімділік деңгейі бойынша Қазақстан 12 орында, сауаттылық деңгейі бойынша 99,8 % әлемде 9 орында. 2019 жылғы БҰҰ даму бағдарламасы ұйымының аясында зерттеу жүргізілді. Зерттеу нәтижесіне сәйкес

Қазақстан білім беру деңгейі бойынша 38 (189) орында (WEF, 2019). Сонымен, жоғары білім жүйесін дамыту және оны экономиканың қажеттіліктеріне бейімдеу мемлекеттің маңызды міндеті болып табылады.

Ғылымның жағдайын қарастыратын болсақ, мемлекеттегі зияткерлік әлеуеттің деңгейіне ғылымның деңгейі де ықпалын тигізеді. Төмендегі 1-суретте шетелдік мемлекеттердің ЖІӨ-ден ғылымды қаржыландыру мәліметтері ұсынылады.



1-сурет – ЖІӨ-ден ғылымды қаржыландыру
Ескерту – авторлар құрастырған

Израильде жылына ғылымға кететін шығын ЖІӨ-нің 4,25% құрайды. Одан кейінгі ғылым мәртебесін көтеретін мемлекеттер Корея, Швейцария, АҚШ, Қытай және т.б. Соңғы жылдары Ресей де ғылымды қаржыландыруға аса мән бере бастады. 2019 жылғы статистикалық мәліметтерге сай, Қазақстан ғылым саласы ЖІӨ-нің 0,12% көлемінде ғана қаржыландырады. Дамыған шетелдік мемлекеттерге қарағанда 10-35 есе аз.

Зияткерлік әлеуеттің деңгейі қаржыландыру деңгейіне сай. Соған орай, республикада ғылым деңгейі төмен. Бұл аталмыш қаржыландыру көздерінің көп бөлігі іргелі ғылымға жұмсалады. Әлемдік тәжірибеге сай, іргелі ғылымды қаржыландыруға қарағанда қолданбалы ғылым мен ҒЗТКЖ қаржыландыру салыстырмалы жоғары болу керек. Сол кезде, қолданбалы ғылым іргелі ғылымнан негіз алып, оны ҒЗТКЖ жүзеге асырып, пайда көзі ретінде мемлекет табыс көру

керек. Дегенмен, мемлекеттегі зияткерлік әлеует толыққанды қолданылмай, техника/технология және инновация төмен болады.

Тұтастай алғанда, Қазақстанда және ТМД елдерінде интеллектуалдық әлеуеттің дамуындағы қарама-қайшылықты тенденция қалыптасты. Бір жағынан, жоғары білім алғысы келетін және білім алатын азаматтар саны өсуде. Олардың көпшілігі қазіргі зиялылар мен зиялы қауым қатарына қосылуда. Қазірдің өзінде экономикалық белсенді халықтың жартысына жуығы өзін заманауи орта тап деп санайды, оның ерекшеліктері тек жоғары білім, жоғары біліктілік қана емес, сонымен қатар жоғары жалақы, елдің саяси өміріндегі белсенділік болып табылады. Екінші жағынан, ғылымның қоғамдағы беделі мен рөлінің төмендеуі жалғасуда. Қазақстандық білім қоғамының тұрақты дамуына кедергі келтіретін себеп ғылыми-зерттеу секторының дұрыс деңгейде дамымауы, мемлекет тарапынан

елеусіз қалдырудың орын алуы болып табылады. Мұндай жағдайда іргелі және қолданбалы ғылымның, жалпы алғанда зияткерлік әлеуеттің дамуындағы қолайсыз тенденциялар пайда болады, бұл қоғам мен мемлекетті тұрақты даму перспективаларынан айырады.

Қазақстанда зияткерлік әлеуеттің қалыптасуы мен дамуы проблемасы оның аймақтық бөлінуінде. Мысалы, Нұр-Сұлтан мен Алматы қалаларында әлемдік деңгейде бәсекелесе алатын жоғары оқу орындары шоғырланған. Бұл университеттердің түлектері тек отандық еңбек нарығында ғана емес, шетелдік еңбек нарығында да жұмыс жасауға қабілетті. Ал, Жамбыл облысы, Қызылорда облысы және Солтүстік Қазақстан облыстарының экономикалық дамуы төмен аймақтарда жоғары білім беру жүйесі де төмен деңгейде екенін халықтың саны мен білім алушылардың саны пропорциясынан көре аламыз. Өңірлерде жақсы білім беру жүйесінің болмауы жастарды басқа аймақтарға оқуға кетуге мәжбүр етеді. Ал жақсы білім алған маман жалақысы жоғары жұмысқа орналасып, өмір сүру жағдайын жақсартуға ұмтылады. Нәтижесінде, қалаға жақсы білім, өмір іздеп келген жастар ауылдарына қайтпайды, даму үрдісі ірі қалаларда қала береді. Аймақтардың бұлай әртүрлі дамуы барлық мемлекет экономикасының дамуын тежейді және сәйкесінше даму деңгейі төмен аймақтарда білім жүйесінің сапасы төмен болуымен түсіндіріледі. Тұрғылықты халықтың білім деңгейі аймақтардың әлеуметтік-экономикалық теңсіздігінің өсуіне немесе кемуіне және инвестициялық тартымдылыққа тура әсер етеді. Білім деңгейі мен аймақтардың әлеуметтік-экономикалық дамуы арасындағы байланысты қарастыра отырып, даму деңгейі төмен аймақтар аутсайдер болып қала береді. Сонда, даму деңгейі төмен аймақтар білімді кадрларға тапшы, инвестиция жағынан тартымсыз болып, мәселе тұйықталған шеңбер болып қала береді. Қазақстан және оның аймақтарының ерекшеліктерін ескере отырып, зияткерлік әлеуеттің төмендігіне әсер ететін факторларды анықтап, тиімді мемлекеттік басқаруды жүзеге асыру үшін зияткерлік әлеуетін бағалау әдістемесін жасау мен негіздеудің маңызы артып келеді.

Әдебиеттерге шолу

Адам капиталы теориясының пайда болуының маңызды шарты – 50-жылдардың аяғы – XX ғасырдың 60-жылдарының басындағы ғылыми-

технологиялық революция. Бұл қоғамның өндіргіш күштерінде терең өзгерістер тудырды, яғни адамның жеке басының экономикадағы рөлі мен маңыздылығы, оның білім деңгейі, ғылыми білімі, тәжірибесі мен біліктілігі айтарлықтай өсті. Тағы бір шарт – ғылымның тікелей өндіргіш күшке айналуы. Мемлекеттегі ғылымның дамуы өндіріс айналымының қарқындылығына тікелей әсер ете бастады. Ғылыми-техникалық прогресс дамыған мемлекеттерде интеллектуалды өндіргіш күштер абсолютті және салыстырмалы мөлшерде дамуы мен материалдық емес байлықты қалыптастыру бойынша өсу байқалады. Экономикалық серпілістің маңызды факторы қоғамның инновацияларды құруға және енгізуге қабілеттілігі болды. Экономикалық ойдың заманға сай дамуына байланысты экономикалық дамудың қайнар көзі – адамның білімі, интеллектісі, шығармашылық қабілеттері.

Қазіргі қоғамның дамуындағы адам мен ақпараттың өсіп келе жатқан рөлі әртүрлі деңгейлердің (адам, кәсіпорын, аймақ, мемлекет) зияткерлік әлеуетін арттырумен байланысты мәселелерді өзекті етеді. XX ғасырдың екінші жартысындағы барлық жетекші мектептер мен экономикалық ойлар экономикалық дамудың зияткерлік компонентін зерттеуге үлкен мән береді. Bell (1973), Schultz (1961), Becker (1964), Sullivan (2000) және т.б. бұл мәселені зерттеуге үлкен үлестерін қосты.

Жалпы, зияткерлік әлеует ұғымын тар мағынада да, кең мағынада да қарастыруға болады. Тар мағынада зияткерлік әлеует дегеніміз – жүйенің пайдаланылатын материалдық өндіріс саласындағы ғылыми және технологиялық жаңалықтарды шығару және енгізу қабілеті. Зияткерлік әлеует кең мағынада – бұл мемлекеттің, аймақтың, ұжымның, адамның ғылым, техника және рухани-адамгершілік саласындағы ерекше жетістіктерін жасау қабілеттерінің жиынтығы. Халықаралық тәжірибеде зияткерлік әлеует білімді адамдардың материалдық әлауқаты деңгейіне әсерін өлшейтін интегралды көрсеткіш ретінде түсініледі (McQuinn, 2007). Сонымен зияткерлік әлеует дегеніміз – адамның, ұжымның, жеке адамдардың немесе тұтас бір ұлттың анықталған, дамитын және мүмкін болатын білімі мен қабілеттерінің жүйесі.

Алайда зияткерлік әлеуетті бағалауға қатысты сұрақтар аз зерттелген. Аймақтың зияткерлік әлеуетін нақты жағдайын бағаламай, оны тиімді басқару мен дамыту қиыншылыққа әкеледі. Бағалаудың өзін жүзеге асырған кез-

де индикаторлар мен көрсеткіштерді дұрыс анықтау маңызды. Бүгінде аймақтың зияткерлік әлеуетін бағалаудың бірыңғай әдістемесі жоқ. Дегенмен, әлемде сан алуан ұқсас және жанама әдістемелер бар. Негіз болатындай әдістеменің бірі 1990 жылы пәкістандық экономист Махбуб Ул-Хак жасаған адам дамуының индексін есептеудің стандартталған және экономикалық ұқсас әдістемесі болып табылады. Адами капиталдың даму индексі (АКДИ) – ұзақ өмір сүру, білім, табыс сияқты компоненттерден құралады. Яғни, адамның толыққанды заманауи стандарттарға сай дамуы үшін оның өмір сүру ұзақтығы, өмір бойы сіңірген білімі мен табысы маңызды орын алады.

Аймақтағы зияткерлік әлеуетті бағалау үшін көптеген әдістемелер ұсынылады. Солардың бірі Л.В. Цомартованың (2011) аймақтағы зияткерлікті әлеуетті мониторингілеу әдістемесін қарастыруға болады. Әдістемеге екі компонент кіреді: білім беру әлеуетінің өзгеру коэффициенті және ғылыми потенциалдың өзгеру коэффициенті.

Көптеген әлеуметтанушылар мен экономистер бірдей ұстанымға ие: М.Н. Руткевич, В.К. Левашов, В.Ж. Келле, И.П. Попова, Ю.П. Лежнина (Руткевич, 2000) және т.б. Олардың тұжырымдауынша, зияткерлік әлеует мамандандырылған интегралды көрсеткіш, оны жалпыланған түрде бағалау үшін қоғамның зияткерлік қызметінің екі өзара байланысты бағытын сипаттау керек, атап айтқанда: ғылым мен білімнің жағдайы.

Шынында да, қазіргі ғылым тек ғылымда ғана емес, сонымен бірге экономикалық-әлеуметтік саланың дамуы ғылымның дамуы мен оның технологияға енуімен ғана емес, жалпы әлеуметтік-техникалық білімнің, әлеуметтік топтардың және бүкіл халықтың білімділігі мен зияткерлік әлеуетінің деңгейімен анықталады. Сонымен қатар, зияткерлік әлеуетінің дамуы халықтың білімі мен мәдениетінің жалпы деңгейі азаматтық санамен тығыз байланысты.

Америкалық экономист Кендрик (1976) адам капиталын бағалауды отбасы мен қоғамның шығындарын келесі түрлер бойынша анықтайды: балаларды жасы жеткенше және белгілі бір мамандық алғанға дейінгі шығыстар; біліктілікті арттыру; еңбек көші-қоны; денсаулық сақтау және басқа шығындармен бағалауға болады деп ой береді. Бұдан басқа, адамның дамуына тұрғын үйге, үй шаруашылығына арналған ұзақ мерзімді тауарларға, отбасындағы өзге тауарларға, адамның зерттеуіне бағытталған

шығындар да әсерін тигізеді деп тұжырымдайды. Кендрик адамның дамуын шығыстармен сипаттаса, Mincer (1994) адами капиталды бағалауда адамның белгілі бір периодтағы кірісімен дамуын байланыстырады.

Сондай-ақ, кейбір зерттеулерде зияткерлік әлеуетті бағалауда қаржылық емес индекстерді есептей отыра бағалайтын әдістер де бар. Олардың бірі сарапшы-балдық әдіс. Тікелей немесе жанама түрде тәуелсіз сарапшылар тобы белгілі бір мәселені балмен белгілей отыра маңыздылығын бағалайды, содан кейін осы бағалауды ескере отырып, әр аймақ үшін жиынтық көрсеткіш есептеледі, аймақтар нәтижесінде шыққан жиынтық көрсеткіштер бойынша сұрыпталады (Дубров, 2009). Статистиканы рангілеу әдістерінде реттік шкаланы қолдана отырып, спорттық қағидаға сәйкес әр облыстың белгілі бір салада статистикасы алынып, басқа аймақтармен салыстырылып, рангіленеді. Әр белгі бойынша әр аймақ салыстырылады, белгі мәні неғұрлым жоғары болса, дәреже соғұрлым төмен болады (Dunning, 2000). Топометриялық әдістерінде жетекші рөлді аймақтар арасындағы қашықтықты өлшеу әдісін анықтайтын енгізілген арнайы метрика ойнайды. Қашықтық әдісінің негізі – салыстырмалы көрсеткіштерге сәйкес аймақтардың жақындығын арнайы эталон бойынша ескеру.

Көпөлшемді масштабтау әдістер, біздің ойымызша аймақтардың зияткерлік әлеуетін бағалауда қолдануға болады. Қазақстанның аймақтарындағы адам санын және зияткерлікке қатысты көрсеткіштерді байланыстыра отырып зерттеуге болады.

Зияткерлік әлеуетін талдау және бағалау кезінде ғалымдардың әдістемелерінде айырмашылықтар бар, яғни кей ғалымдар ресурстық тәсілмен, ал екіншілері нәтижелік тәсілді қолданады (Swart, 2006). Ресурстық тәсіл зияткерлік әлеуеттің анықтамасынан шығады, яғни әлеуметтік-экономикалық даму мақсатында әлеуметтік өндірістің ресурстарының (материалдық, табиғи, еңбек, қаржылық, ақпарат) ерекше жиынтығы және ұлттық экономиканың ғылыми-технологиялық білімдерін технологиялық және коммерциялық мақсаттарда пайдалану. Яғни, ресурстарды қолдана отырып зияткерлік әлеуетке ықпал ету.

Басқа ғалымдар (Л.С. Бляхман, Ф.Л. Мерсон, Э.М. Торф) зияткерлік белсенділіктің «шығуын» бағалауға негізделген нәтижелік тәсіл қолданады (Иванцов, 2003). Бұл жағдайда макро деңгейде ұлттық экономиканың зияткерлік элементі бар

тауарларды сыртқы нарықтарда сатудан алған қаржылық нәтижелері талданады.

Ресейлік экономист ғалымдар зияткерлік әлеуетті бағалағандай, келесідей компоненттерді жүйелеуге болады:

Білім әлеуеті – жалпы жұмыспен қамтылған халықтың жалпы білім деңгейі (халықтың оқу орындарында өткізген жылдарының орташа саны); студенттердің халық санындағы үлесі; жалпы ішкі өнімдегі білім беруге жұмсалатын шығындардың үлесі, қосымша жоғары немесе орта кәсіптік білім жылдарының саны, ғылыми дәрежесі бар адамдар саны, оқушы / мұғалім қатынасы (білім сапасы), халықтың сауаттылық деңгейі және т.б.

Ғылым әлеуеті – ғылым және ғылыми қызметтер саласында жұмыс істейтіндердің үлесі, мемлекеттік бюджеттен және басқа да көздерден ғылымға шығындар, ЖІӨ-ге ғылымға кететін шығындардың үлесі, жан басына шаққандағы ҒЗТҚЖ үлесі, 10 мың адамға шаққанда магистранттар санының халық санына үлесі, 10 мың адамға шаққанда ғылыми-зерттеу және тәжірибелік-конструкторлық жұмыстармен айналысатындар санының халық санына шаққандағы үлесі және т.б.

Инновациялық әлеует – бір жылдағы өнертабыстар саны; берілген патенттер саны, зерттеумен және өңдеумен айналысатын адамдар саны, ғылыми зерттеулермен айналысатын ұйымдардың үлесі, іске асырылған өнертабыстардың үлесі, зерттеу және өңдеумен айналысатын ұйымдар қызметкерлерінің жалпы санындағы үлесі, ЖЖӨ-дегі зерттеулер мен әзірлемелердің үлесі.

Әлеуметтік әл-ауқат әлеуеті – орташа өмір сүру ұзақтығы, олардың зияткерлік әлеуетін жүзеге асыруға қабілетті халықтың үлесі (мүгедектерді қоспағанда), орташа жұмыс жасы, денсаулық сақтау шығыстарының ЖІӨ-дегі үлесі.

Көптеген зерттеулерде ресурстық және нәтижелік тәсілдер араластырылып қолданылады. Бұл жағдайда зияткерлік әлеуетті бағалау интеллектуалдық қызмет нәтижелерін (инновациялар / енгізілген инновациялар көлемі) және ресурстарды (негізгі құралдардың тозуы, айналымдағы активтердің айналымы) біріктіретін көрсеткіштерге негізделіп бағалау жүзеге асырылады.

Көптеген зияткерлік әлеуетті бағалау тәсілдері мен әдістерін зерттей келе, зияткерлік әлеуетін бағалаудың әмбебап және идеалды әдістемесі жоқ деген қорытынды жасауға бола-

ды. Басты себеп – әр елдің және аймақтардың өзіндік ерекшеліктері.

Сол себепті, қазіргі қоғамның дамуындағы адам мен ақпараттың рөлі зияткерлік әлеуетті (адамдағы, қоғамдағы, кәсіпорындағы, аймақтағы, мемлекеттегі) арттыруға байланысты мәселелерді өзекті етеді. Ол үшін мемлекет пен оның аймақтарындағы зияткерлік әлеуеттің деңгейін анықтап алып, сол бағытта жұмыстар орындалуы тиіс. Аймақтардың зияткерлік әлеуетін дамыту үшін сәйкес келетін даму стратегиясын қабылдау керек болады. Ол үшін оның ағымдағы жағдайын бағалай отыра, дамуды тежейтін факторларды анықтап алу керек. Бұл Қазақстанның аймақтарында зияткерлік әлеуетке әсер ететін экономикалық көрсеткіштердің деңгейін білуге назар аударады. Осы жерде, аймақтардағы зияткерлік әлеуетті бағалауға қызығушылық туады. Аймақтардағы зияткерлік әлеуетті бағалау келесідей мүмкіндіктер тудырады:

- аймақтағы зияткерлік әлеуетке әсер ететін ғылым мен білімнің даму деңгейін анықтау;
- аймақтағы инновациялық үрдістің даму деңгейін айқындау;
- аймақтағы халықтың тұрмыс-тіршілігінің деңгейін білу.

Әдіснама

Мақалада логикалық әдістердің ішінде талдау, сапалы талдау, индукция, интерпретация, түсіндіру сияқты әдістер қолданылады.

Тәжірибеде бар әдістердің сан түрі сипатталып, талданылып, логикалық әдістердің көмегімен артықшылықтары мен кемшіліктері анықталынады. Сапалы талдау көмегімен Қазақстандағы зияткерлік әлеуетті бағалаудың интегралды әдістемесіне негіз болатын тұжырымдар анықталады. Мақала жазу барысында басқа ғалымдар ойлап тапқан зияткерлік әлеуетті бағалау әдістері талданып, нәтижесінде Қазақстан ерекшеліктеріне бейімделген авторлық интегралды көпфакторлы зияткерлік әлеуетті бағалаудың индекстік әдісі ұсынылады.

Нәтижелер мен талқылау

Әдебиеттерге шолуда зияткерлік әлеуетті бағалаудың көптеген тәсілдері мен әдістері айтылды.

АҚДИ бағалау әдістемесі жоғарыда сипатталған, ол біздің еліміздің ерекшеліктеріне анағұрлым сәйкес келеді. Алайда, бұл әдістеме аймақтың әлеуметтік дамуына бағытталған. Дж.

Кендрик пен Дж. Минцер әдістемесі ақшалай қаражаттарға негізделген. Бірақ бағалау кезінде аймақаралық бағалау қиындық тудырады. Себебі, аймақтар мен мемлекеттер арасында адамдардың ақшалай қаражаттарының ағымы әр түрлі, оның ішінде атап айтсақ, орташа жалақы мөлшері және т.б.

Сондай-ақ, зияткерлік әлеуетті бағалауда қаржылық емес әдістердің де кемшіліктері бар. Статистикалық динамиканы бағалау параметрі мемлекеттің өзгеру бағытын анықтауда, яғни дамудың оң немесе теріс динамикасын анықтауға мүмкіндік береді, бірақ ол зияткерлік әлеуеттің сапалық деңгейін анықтауға мүмкіндік бермейді. Нақты қандай салалар арқылы зияткерлік әлеуетті дамытуға болады деген сұраққа жауап бере алмайды. Сарапшы-балдық әдіспен бағалауда аймақтағы зияткерлік әлеуеттің нақты жағдайын бағалауда ауытқулар жібереді, себебі алынатын белгілер біртекті емес, яғни инновацияның әртүрлі бағыттарындағы зияткерлік потенциал қасиеттерінің қарқындылығын бағалайды. Статистикалық рангілеу әдісі де нақты жағдайды бағаламайды. Мысалы, зияткерлік әлеуетті бағалауда барлық аймақтар біркелкі алынады, бірақ ол аймақтардың дамуы бірдей емес, халық саны, алып жатқан аймағы біркелкі емес және т.б.

Топометриялық қашықтық әдісінің негізі салыстырмалы көрсеткіштерге сәйкес аймақтардың жақындығын ескеру болып табылады. Осы әдістер тобында жетекші рөлді функционалдық кеңістіктегі аймақтар арасындағы қашықтықты өлшеу әдісін анықтайтын енгізілген метрика ойнайды (Bontis, 1998). Көбінесе эталон ретінде зерттелген көрсеткіштердің орташа арифметикалық мәні бар типтік аймақ алынады. Бірақ, әдетте, ондай алынатын эталон-

да асимметриялық үлестірулер басым болады, сондықтан бұл таңдау да сәтті болмайды, сәйкесінше бағалау да нақты болмайды. Енгізілген эталонды қолдану арқылы аймақтарды кластерлеуге болады. Біздің жағдайда бұл әдісті қолдану жеке көрсеткіштердің аймақтық рейтингтің интегралдық мәніне әр түрлі әсерін ескеруге мүмкіндік бермейді.

Көпөлшемді масштабтау әдістері. Біздің ойымызша, әдістердің бұл тобы тапсырманы шешуде ең қолайлы болып табылады.

Біріншіден, аралық масштабтау әдістері сандық және сапалық көрсеткіштерді бірыңғай бір жүйеге келтіріп, бағалауға мүмкіндік береді. Екіншіден, квалиметриялық тәсіл (сапаны сандық бағалау) негізінде алынған бағалауда аймақтарды зияткерлік әлеуетінің даму деңгейіне қарай жіктеуде қолданыла алады.

Осылайша, зияткерлік әлеуетті экономикалық, қаржылық, әлеуметтік және басқа компоненттерді біріктіретін «өте интеграцияланған» бағалау аймақтағы әлеуметтік-экономикалық жағдайдың жалпы жағдайын көрсетеді. Зияткерлік әлеуетті бағалау әдістемелерін тереңдетіп зерттеу аймақтың интеллектуалды дамуының барлық жағдайын барабар көруге мүмкіндік береді.

Талқыланатын зияткерлік әлеуетті бағалаудың әдістерінің негізгі мақсаттары – зияткерлік әлеуеттің даму деңгейі мен оның құрамын анықтау, бағалаудың нәтижесіне негізделе отырып аймақтың зияткерлік әлеуетін дамыту және аймақтағы инновациялық дамуды ілгерілету. Осы бағытта белгілі ғалымдар мен мамандардың көптеген еңбектерінде келтірілген әдістер мен олардың көрсеткіштерін зерттедік. Соларды талқылай отыра, 1-кесте бағалаудың бірнеше негізгі әдіснамалық тәсілдерін бөлуге мүмкіндік берді.

1-кесте – Зияткерлік әлеуетті интегралды бағалаудың негізгі әдіснамалық тәсілдерін салыстырмалы талдау

Бағалау әдіснамасы	Бағалау әдісінің мақсаты	Әдіс артықшылықтары	Әдіс кемшіліктері
Ресурстардың шығыстары арқылы бағалау	Аймақтардың жетістіктері мен артта қалушылықтарын анықтау	- әлеует құрылымы мен динамикасын бағалау мүмкіндігі; - жеке компаниялар үшін де, жеке аймақ үшін де, жеке мемлекет үшін де бағалау мүмкінгі бар	Шығыстар мен табыстардың көздері болатын ресурс-факторларды таңдау қиындығы
Ресурстарды табыстары арқылы бағалау			

Бағалау әдіснамасы	Бағалау әдісінің мақсаты	Әдіс артықшылықтары	Әдіс кемшіліктері
Индекстік талдау	Аймақтың зияткерлік әлеуетін сипаттайтын сәйкес көрсеткіштерді анықтау	- қарапайымдылық, ауқымды есептеуді қажетсінбейді	- қолданылатын көрсеткіштердің бірыңғай ақпарат берілуі; - әлеуеттің динамикасы мен құрылымын талдауда қиыншылықтар туындауында; - қала деңгейінде есептеуде қиыншылық тудырады
Оптимизациялық модельдерді құрып талдау	Аймақты дамытудың оптималды стратегиясын құрастыру	- аймақтардың ерекшеліктерін қолданып, оптимизациялық шараларды құрастыру мүмкіндігі	- арнайы ақпарат базасын қажетсінбейді; - есептеу жүргізу қиындығы; - модельді құрастыру логикаға ғана сүйену
Корреляциялық-регрессиондық модель	Факторлар арасындағы тәуелділікті анықтау, зияткерлік әлеуетті бағалау стратегиясын мақсатты жүргізу	- әр фактордың әсерін есептеу	- әлеуеттің динамикасын талдау қиындығы; - аз көлемді байқау арқылы әдісті қолдана алмау; - тиісті есептеу нәтижелерін алу әрдайым мүмкін емес, өйткені маңызды барлық әлеуметтік, экономикалық және экологиялық көрсеткіштерді ескеру қиын, есептеуде бұрмалау болады
Ескерту – авторлар құрастырған			

Аталған әдістердің жалпы әлсіздігі, бір аймақтың екіншісінен ауытқу ауқымын және сандық дәрежесін бағалау мүмкін еместігі болып табылады. Сонымен бірге, бірқатар зерттеушілердің пікірі бойынша, қазіргі кезде статистикалық есепте көрсетілген индикаторлар жүйесі аймақтардың даму әлеуетін объективті бағалау мақсаттарына сәйкес келмейді.

Ғалымдардың әдістерін саралай келе, Қазақстан және оның аймақтарының зияткерлік әлеуетін бағалайтын авторлық кешенді интегралды индекстік бағалау әдісін ұсынуға болады. Бағалаудың алгоритмі 1-суретте ұсынылады. 1-сурет алгоритмге сәйкес, білім мен ғылым және инновация бағытындағы көрсеткіштерді анықтап алуымыз керек. Көрсеткіштерді таңдауда барлық зерттелінетін аймақтар бойынша статистикалық көрсеткіштердің қол жетімділігі айтарлықтай әсер етеді. Статистикалық мәліметтерді пайдалану алынған нәтижелердің объективтілігін арттырады және оларды аймақаралық салыстыру және интеллектуалды әлеуеттің жағдайын зерттеу тұрғысынан қолдану мүмкіндіктерін кеңейтеді. Осыған орай, құрастырылатын әдіс келесідей көрсеткіштерді қамтиды:

1. Интеллектуалды әлеуетті сипаттауда қолданылатын ғылым мен білім индекстері:

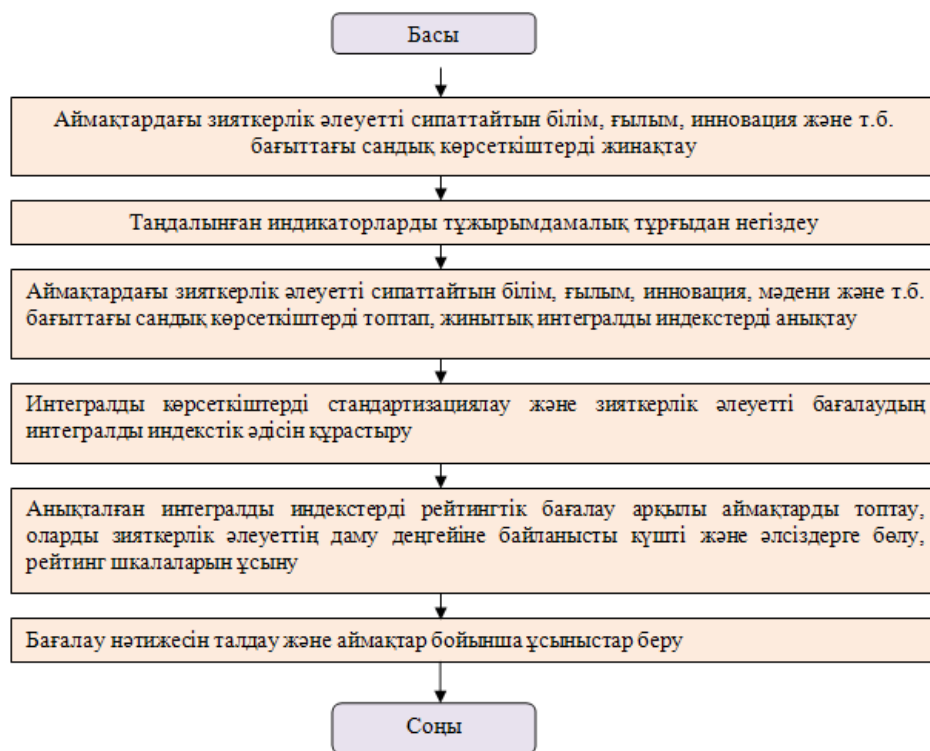
- аймақтық экономикада жұмыс істейтін 1000 адамға шаққандағы ғылыми қызметкерлер үлесі;
- жалпы аймақтық өнімдегі зерттеулер мен әзірлемелерге жұмсалған шығындардың үлесі;
- 10000 тұрғынға шаққанда университет студенттерінің үлесі;
- 10000 тұрғынға шаққанда университет докторанттарының үлесі;
- ПОҚ-тың жалпы халық санындағы үлесі;
- ғылыми-зерттеу жұмыстарына жұмсалған қаражат үлесі және т.б.

2. Интеллектуалды әлеуетті сипаттауда қолданылатын инновация индекстері:

- аймақтағы инновациялық белсенділік деңгейі;
- аймақтағы жалпы кәсіпорындарға инновациялық белсенді кәсіпорындардың үлесі;
- тауарлардың, жұмыстар мен қызметтердің жалпы көлеміндегі инновациялық тауарлардың, жұмыстар мен қызметтердің үлесі;

3. Интеллектуалды әлеуетті сипаттауда қолданылатын әлеуметтік әл-ауқат индекстері:

- Джини коэффициенті;
- Аймақтағы өмір ұзақтығының деңгейі және т.б. (денсаулық, табыс деңгейі және т.б.);
- Мәдениеттілік индексі (музей, театр, концерт т.б.).



2-сурет – Аймақтағы интеллектуалды әлеуетті бағалау алгоритмі
Ескерту – авторлар құрастырған

Аталынған индекстерді жинақтап интегралды үш ірі индексті есептейміз. Оны келесідей формуламен есептеуге болады:

$$X_i^{(Un)} = \frac{X_{max} - X_i}{X_{max} - X_{min}}, \quad (1)$$

мұндағы, U_n – интеллектуалды әлеует индикаторының индексі;

X_i – i -ші көрсеткіштің нақты мәні;

X_{min} және X_{max} – қарастырылатын кезеңдегі индикатордың минималды және максималды мәні барлық зерттелген аймақтар;

i – индикаторлардың саны.

Көрсеткіштерді бірқалыпты түрге келтіріп алған соң арифметикалық орта есептеу өлшемі арқылы I_{KS} (білім және ғылым индексі), I_{innov} (инновация индексі), I_{social} (әлеуметтік әл-ауқат индексі) – индекстерін анықтаймыз.

Интеллектуалды әлеуетке әсер ететін білім мен ғылым индексі (I_{KS}) – аймақтық экономикада жұмыс істейтін 1000 адамға шаққандағы ғылыми қызметкерлер үлесі, жалпы аймақтық өнімдегі зерттеулер мен әзірлемелерге жұмсалған шығындардың үлесі, 10000 тұрғынға шаққанда университет студенттерінің үлесі, 10000

тұрғынға шаққанда университет докторанттардың үлесі, ПОҚ-тың жалпы халық санындағы үлесі, ғылыми-зерттеу жұмыстарына жұмсалған қаражат үлесі және т.б. индекстермен сипатталады.

Интеллектуалды әлеуетті сипаттауда қолданылатын инновация индексі (I_{innov}) аймақтағы инновациялық белсенділік деңгейі, аймақтағы жалпы кәсіпорындарға инновациялық белсенді кәсіпорындардың үлесі, тауарлардың, жұмыстар мен қызметтердің жалпы көлеміндегі инновациялық тауарлардың, жұмыстар мен қызметтердің үлесі көрсеткіштерін қамтиды.

I_{social} (әлеуметтік әл-ауқат индексі) – Джини коэффициенті, аймақтағы өмір ұзақтығының деңгейі және т.б. көрсеткіштерді қолдануға мүмкіндік бар. Жоғарыда келтірілген әдістерді талдаудан кей экономист ғалымдар, адамның интеллектуалды қабілетіне оның тұрғылықты өмір сүру сапасының әсерін маңызды екенін көрсетеді. Адамды толғандыратын сұрақтардың аз мөлшеріне сәйкес, оның интеллектуалды қабілетінің шексіздігін байқаймыз. Сол себепті, аймақтағы интеллектуалды әлеуетті бағалауда тұрғылықты халықтың тұрмыс деңгейі, табыс деңгейі және жұмыссыздық тығыз әсері бар. Сол

себеппті, үшінші индекс аймақтың әлеуметтік әлауқатын сипаттайды.

Қорытынды

Интеллектуалды әлеует инновациялық және ғылымды қажет ететін өндірістерді дамытудың негізі болуы үшін аймақтық экономикалардың нақты қажеттіліктерін, сондай-ақ әр аймақтың ерекшеліктерін ескеру қажет.

Өңірдің зияткерлік әлеуетін бағалау Қазақстан Республикасы аймақтарының типологиясын құрап, бағалау нәтижелері аймақтың зияткерлік әлеуетін дамыту бағыттарын анықтауға мүмкіндік береді.

Аймақтың зияткерлік әлеуетін бағалаудың әзірленген әдістемесі аймақтың инновациялық әлеуетінің деңгейін айқындауға, өңірлерді зияткерлік әлеуеттің деңгейімен салыстыруға, Қазақстан Республикасының субъектілерін облыстың зияткерлік әлеуеті деңгейімен саралауға және аймақтың адами ресурстарын тиімді пайдалануды ескере отырып, аймақтық даму бағдарламаларын жасауға мүмкіндік береді.

Зияткерлік әлеуетті бағалау әдістемесі аймақтың инновациялық дамуын күшейтуге бағытталған, өйткені бұл өңірлер мен облыстардың басқару органдарына келесідей мүмкіндіктер береді:

- зияткерлік әлеуеттің жай-күйі мен даму динамикасын бақылау негізінде басқару тетігін жетілдіруге;

- зияткерлік әлеуетінің сапасына қарай аймақтарды саралау және кластерлеу негізінде аймақаралық салыстыруды жүргізу, аймақтық инновациялық саясаттың міндеттерін түзету және аумақтың инновациялық дамуын басқарудың тиімділігін бақылауға;

- зияткерлік ресурстардың сапасы мен қайтарымдылығын арттыруға, инвестициялық

тартымдылығын арттыруға негізделген жоғары технологиялық өндірістерде аймақтың бәсекеге қабілеттілігін қамтамасыз етуге;

- облыстағы білім жүйесін басқаруда маневрлі тез әрекеттер қолдану жергілікті білім бері жүйесін жетілдіруге;

- облыстағы инновациялық үрдісті ынталандыруға;

- облыстағы ғылымды дамытуға мүмкіндіктер тудырады.

Зияткерлік потенциалды бағалау әдістемесін және оның сапасын басқару тетіктерін практикада іске асырудан келесідей әсерлер:

қаржылық, коммерциялық – аймақтың ғылыми, техникалық және ғылыми-зерттеу қызметінен түсетін табыс артуы, инновациялық тауарлар мен қызметтер санының артуы;

бюджеттік – ғылыми-зерттеу және тәжірибелік-конструкторлық жұмыстардан түсетін аймақтық бюджеттің кірісінің ұлғаюы, бизнес-құрылымдардың инновациялық үрдіске белсенді қатысуы;

басқарушылық – басқарушылық инновациялардың санын көбейту, инновациялық менеджменттің сапасын арттыру;

жалпы экономикалық-инновациялық технологияларды экспорттаудан, ішкі және сыртқы нарықтарда инновациялық өнімдерді сатудан, лицензиялар мен ноу-хауларды сатудан түскен ұлттық табыстың өсуі;

бәсекелестік пен тұрақсыз экономика жағдайында экономикалық қауіпсіздікті қамтамасыз ету.

Осылайша, зияткерлік әлеуетті жан-жақты факторларды ескере отырып бағалау әдістемесі аймақтың инновациялық белсенділігін арттыру мақсатында теориялық және аспаптық-әдіснамалық негізі ретінде перспективалы деп қорытынды жасауға болады.

«Мақала Қазақстан Республикасы Білім және ғылым министрлігінің гранттық қаржыландыру жобасы "Қазақстан Республикасы аймақтарының зияткерлік әлеуеті: бағалау және даму перспективалары» (AP08052800) аясында дайындалған»

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TAXATION IN THE DIGITAL ECONOMY

The digital economy is increasingly replacing the everyday economy. The continued rapid pace of technology development and its use in business presents exciting opportunities for entrepreneurs and challenges for tax authorities. In the digital economy, traditional correspondences, dependencies, and proportions inherent in the industrial-market economy are no longer effective. Traditional methods of regulation in the new economy are no longer effective, especially in the field of taxation. We need new tax rules that take into account the specifics of the technologies used. The rules should reflect the use of virtual currencies, digital goods, classification and taxation principles. The purpose of the study is to identify the main problems in the taxation of the digital economy and ways to solve them based on foreign experience. The scientific significance of the research is based on the study of the theory and practice of taxation in the field of digital economy. The practical significance of the research is justified by the possibility of using the research materials for further assessment and solution of taxation problems in the digital economy. The research in the article was carried out on the basis of information from international and public organizations, scientific works of foreign scientists. Such research methods as analysis, analogy, abstraction and concretization were used.

Key words: digital economy, taxation, cryptocurrency, transfer pricing, the “arm’s length” principle.

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Цифрлық экономикадағы салық салу

Сандық экономика көбінесе күнделікті экономиканы алмастырады. Технологиялардың қарқынды даму қарқыны және оларды бизнесте пайдалану кәсіпкерлер үшін қызықты мүмкіндіктер мен мемлекеттің салық органдары үшін сын-қатерлер болып табылады. Сандық экономикада индустриялық-нарықтық экономикаға тән дәстүрлі сәйкестік, тәуелділік және пропорция пәрменді бола алмайды. Жаңа экономикадағы реттеудің дәстүрлі әдістері, әсіресе салық салу саласында пәрменді болуды тоқтатады. Пайдаланылатын технологиялардың ерекшеліктерін ескеретін жаңа салық ережелері қажет. Ережелерде виртуалды валюталарды, сандық тауарларды пайдалану тәртібі, салық салу жіктелуі мен принциптері көрсетілуі тиіс. Зерттеудің мақсаты сандық экономикаға салық салу кезіндегі негізгі проблемаларды және шетелдік тәжірибе негізінде оларды шешу жолдарын анықтау болып табылады. Зерттеудің ғылыми маңыздылығы сандық экономика саласындағы салық салу теориясы мен тәжірибесін зерттеумен негізделген. Зерттеудің практикалық маңыздылығы сандық экономикадағы салық салу мәселелерін одан әрі бағалау және шешу үшін зерттеу материалдарын пайдалану мүмкіндігіне негізделген. Мақалада зерттеу әр түрлі халықаралық және қоғамдық ұйымдардың ақпараттары, сондай-ақ осы тақырып бойынша шетелдік ғалымдардың ғылыми еңбектерінің негізінде жүзеге асырылды. Зерттеуде талдау, аналогия, абстрагирлеу және нақтылау сияқты зерттеу әдістері қолданылды.

Түйін сөздер: сандық экономика, салық салу, криптовалюта, трансферттік баға белгілеу, «қол созу» принципі.

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Налогообложение в цифровой экономике

Цифровая экономика во все большей степени заменяет собой повседневную экономику. Продолжающиеся быстрые темпы развития технологий и их использование в бизнесе представляет собой захватывающие возможности для предпринимателей и вызовы для налоговых органов государства. В цифровой экономике перестают быть действенными присущие индустриально-рыночной экономике традиционные соответствия, зависимости и пропорции. Традиционные методы регулирования в новой экономике перестают быть действенными, особенно в сфере налогообложения. Необходимы новые налоговые правила, учитывающие специфику используемых технологий. В правилах должны отразиться порядок использования виртуальных валют, цифровых товаров, классификация и принципы налогообложения. Целью исследования является определение основных проблем при налогообложении цифровой экономики и путей их решения на основе зарубежного опыта. Научная значимость исследования обоснована исследованием теории и практики налогообложения в области цифровой экономики. Практическая значимость исследования обоснована возможностью использования материалов исследования для дальнейшей оценки и решения проблем налогообложения в цифровой экономике. Исследование в статье осуществлялось на основе информации различных международных и общественных организаций, а также научных трудов зарубежных ученых по данной тематике. В исследовании использовались такие методы исследования, как анализ, аналогия, абстрагирование и конкретизация.

Ключевые слова: цифровая экономика, налогообложение, криптовалюта, трансфертное ценообразование, принцип «вытянутой руки».

Introduction

Against the background of economic globalization, national legislation in the field of taxation does not always develop adequately to the new challenges that arise due to the complexity of the processes of activities of transnational corporations, the volatility of cash flows of capital due to the active development of digital trade. These factors create convenient conditions for avoiding state taxation for large international companies. This undermines the existing universality and fairness of state tax systems.

One of the clear tools used by international companies to avoid taxing countries without formally violating the current state legislation is «blurring the tax base with subsequent profit shifting» (Base Erosion and Profit Shifting, BEPS). This is a set of international tax planning strategies that allow large companies to declare their profits (losses) for taxation in those tax jurisdictions where they have not conducted any special economic activity that contributed to the extraction of these profits (losses), especially if the income tax rates in the country are relatively low (or even zero).

BEPS negatively affects the tracking of revenues to national budgets of countries tax deductions and

the greatest negative impact of such strategies is felt in developing countries, where corporate income tax revenues play a significant role in the structure of budget revenues (Olbert & Spengel, 2017: 7).

The severity of the BEPS problem is confirmed by a number of studies. Thus, according to the OECD, the minimum losses from the erosion of the tax base and the movement of profits are 4-10% of global income tax collections, i.e. from \$ 100 to \$ 240 billion.

The OECD highlights the following features of e-business: high mobility (including for tax optimization purposes); inextricable connection with data, including working with big data (Big Data); presence of network effects; multi-party business models (including links between parties from different jurisdictions); within each specific business model, rapid market monopolization is possible; low barriers to market entry; high contribution of intangible assets to value creation (OECD, 2015).

Due to these features, the main problems arise when collecting corporate income tax and VAT. In terms of VAT, the complexity lies in the simultaneous administration of a large number of residents of other jurisdictions who supply both physical and digital products to consumers in the jurisdiction in question.

In terms of income tax, the situation is more complicated due to the high mobility of business and the ability to organize a flexible structure, the main problem here may be transfer pricing, which allows you to concentrate profits in convenient jurisdictions. In contrast to the market for conventional goods, in this market, it is quite difficult for tax authorities to determine the true market value of electronic services, which are often unique in nature (software, design). This makes it clear that these tasks cannot be solved without understanding the structure of e-business.

Companies practice «transfer pricing», which allows you to attribute the net profit, as well as losses of the organization before payment of relevant taxes to the account of jurisdictions that are not transparent for taxation with low tax rates, acting as so-called «tax havens». To prevent this practice, many countries have introduced an important «thin capitalization» rule. The rule counteracts the subsequent cross-border movement of profits (indicating losses) by using excessive debt levels (debt). It is aimed at protecting the country's tax (budget) base. States through organizations of interstate cooperation (including with the help of the OECD) coordinate national policies to minimize the impact of known offshore zones on the erosion of the state tax base and the withdrawal of company profits to prevent huge budget losses. For this purpose, a system of measures was developed for the necessary coordination of the tax policy of states that are members of international associations, which consists in comparing and equalizing tax rates in different states and eliminating the principle of double taxation.

There are two groups of problems in taxation of the digital economy: the first group of problems includes the problems of taxation of businesses based on digital platforms, and the second – the problems of taxation of businesses whose products are completely or significantly digital. The second group includes almost all high-tech businesses. First of all, this concerns the use of blockchain technology and cryptocurrencies instead of conventional money. When offsetting or using cryptocurrencies that do not have the official status of money in mutual settlements, it is tempting not to consider intermediate transactions as transactions.

Officially, there is no movement of money, but the tax authorities have reason to believe that transactions are being made, and therefore there are questions about paying taxes related to income and taxes related to turnover. Exactly the same can be said about transactions made within the

network based on blockchain. If the tax is paid upon shipment, and not upon receipt of payment, then there are many reasons for collecting taxes.

Based on the results of an empirical study, the following suggestions were made, relying on the professional experience of specialists: only professionals in their field with higher education are able to perform illegal activities in the electronic space, violating the established legal norms and rules. In many cases, these organizations operate on the basis of officially registered activities.

However, they participate in the digital shadow economy in order to avoid taxation of income received from operations in the electronic space. According to demographic characteristics, the usual subjects of the digital shadow economy are young people or middle-aged men, according to official reports, whose income does not reach the minimum wage rate (Gasparyniene & Remeikiene, 2016: 846).

The legal status of cryptocurrencies in Kazakhstan is currently not defined. The Ministry of national economy clarified that cryptocurrencies are not classified as either goods, currencies, or securities. Accordingly, the current tax code of the country does not contain rules for taxation of cryptocurrencies. The Ministry noted that this issue is new for the country. Therefore, this topic should be studied in the light of international experience.

The State revenue Committee under the Ministry of Finance reported that at the moment this issue is regulated by articles on other income. Thus, according to the Tax code, other income subject to taxation includes funds received from sources outside of Kazakhstan. At the same time, individuals who received other income, including outside of Kazakhstan, submit a Declaration on individual income tax (Margatskaya & Margatsky, 2017: 160).

Literature review

The term «digital economy» (the author of the term is Nicholas Negroponte) appeared in 1995. This concept itself is associated with the extensive intensive development and promotion of information and communication technologies (ICT), its consequence is the beginning of the process of informatization of the second technical generation. This served as the basis for the emerging modern VI technological order. It is obvious that all spheres of human long-term life (economic, social, regional, political, cultural, social and many others) are being improved in one way or another due to changes in the development of ICT (Yudina, 2016: 13).

The concept of digital economy is closely related to the concept of economy. The main scientists, theorists, and practitioners of Economics as a science are A. Smith, D. Ricardo, K. Marx, F. Engels, and J.M. Keynes, Th. Schumpeter and other foreign scientists. The works of these scientists are aimed at analyzing the nature of capitalism and the market economy (Schumpeter, 2011). The digital economy also obeys the basic laws of the market and aims to make a profit.

One of the processes of formation of the digital economy is the transfer of various types of socio-economic activities using ICT in the electronic environment of the Internet: e-Commerce, e-business, e-learning, e-media and e-government.

Recognized modern achievements in changing the global information and communication environment of technologies and the Internet have led to the formation of a developed global electronic environment for various types of economic activities, which has also opened up new opportunities for financial, organizational and institutional design in existing business and scientific spheres of socio-economic activity.

It is recognized that ICT play a crucial role in increasing innovation and productivity; improving living standards; improving competitiveness, as well as economic and social modernization, overcoming economic and social problems, and reducing poverty worldwide.

Three aspects of the digital economy are considered in terms of how customers participate in the digital economy. These include:

1. Doing business using virtual currencies such as bitcoin;

2. The provision of digital goods and services; and

3. Interaction of business enhanced by the Internet, for example, customer search, including working in the «exchange economy» (Nellen, 2015: 29).

The penetration of digital technologies into all spheres of life, called digital transformation, affects, among other things, the tax system not only by digitizing routine operations, but also in the field of promoting the impact of tax changes on the evolution of taxation in the system of the digital economy.

The tax system should reflect the shifting points of value creation and changing business forms that accompany digital transformation. Ignoring these changes will inevitably lead to negative consequences: either budget revenues will be significantly reduced, or the tax system will begin to slow down the development of new forms of business that form the digital economy.

The question of optimizing the tax system and adapting it to the conditions of the digital economy may require non-standard solutions based on an understanding of the situation as a whole, including the functions of the tax system, the specifics of the digital economy, and the possible consequences of decisions made. The world practice here is very diverse. In particular, this applies to cryptocurrencies and transactions in them. Initially, the attitude towards them in all countries was extremely negative. However, since 2013, the situation began to change quickly, «cryptocurrencies have gone on the offensive» (Katasonov, 2017).

There are favorable conditions for the commercialization of digital business forms in Singapore and Switzerland. It is in these countries that offices are located that provide an interface with the real world of the Ethereum virtual machine. In a number of countries, transactions in cryptocurrencies are regulated by the same legislation as transactions in conventional currency, including taxation. Great Britain, Germany and the Netherlands have already followed this path.

Among the main functions of the tax system, there are usually fiscal, distributive, regulatory and control functions. The most important among them is the fiscal function, which ensures that budgets at all levels are filled. The control function allows the state to monitor the sources of income of citizens and the movement of funds. The distributional (or social) function ensures that income is redistributed between different segments of the population and that the poor have access to certain types of goods, such as medicine and education. The regulatory function includes two components-stimulating and discouraging certain types of activity (Barulin et al., 2007).

Digital transformation of business can very much affect all four functions of the tax system, but the most painful for the state may be violations in the implementation of two of them — fiscal and control. The regulatory function of the tax system is more important for the digital economy itself, and in terms of possible hindrances to successful development. It has a great potential for braking.

Thus, the procedure for taxation of digital business is significant due to the need for solve problems with tax collection, with the appearance of potential conflict situations, with abuse by organizations.

Methodology

The purpose of the research is defined as the identification of the main problems in the taxation

of the digital economy and ways to solve them based on foreign experience, so the main research methods are analysis, analogy, abstraction and concretization.

The research hypothesis is that the tax mechanism of the digital economy will be formed at the necessary level only in conjunction with the regulatory framework, improvement of existing legislation, however, for digital money and its use, it is necessary to develop state control and a mechanism for registering payment systems, change the procedure for opening accounts (creating e-wallets by users), and principles for subsequent identification of customers (users) of the system and their transactions with regulatory authorities. Also, the taxation mechanism should be oriented towards the principle of determining tax jurisdiction - the fundamental principle of the Internet.

The research was carried out based on information received from various sources, including information from international and public organizations, scientific works of foreign scientists. Scientific and practical materials, publications in periodicals and the Internet were utilized.

The major results of the research are given in the conclusion, which provides relevant conclusions.

Results and discussion

The development of e-Commerce has revealed a wide range of issues related to taxation, fees and customs restrictions. The application of conditions in the global network of digital transactions therefore creates many difficulties for existing state tax authorities due to the anonymity of e-Commerce entities, the lack of ability to track transactions, as well as the suppression of borders through the use of global networks.

A serious problem is the regulation at the state level of banking transactions carried out using distributed interaction technology «blockchain». The spread of modern electronic payment systems, the improvement and development of electronic payments, the widespread use of cryptocurrencies leads to the fact that the speed of money circulation increases and increases. This leads to the spread of a number of problems: control over the issue of electronic and network money, regulatory regulation of the money supply in circulation, the study of the impact of the mass of electronic money on inflation and changes in the economic growth of the country and in the world economy (Dyatlov, 2017: 85-86).

The worldwide countries are act according to the important «arm's length» principle used in the norms of the OECD Guidelines. It describes five

methods for measuring prices for tax purposes. These include:

- The uncontrolled price comparison method (CUP);
- The resale method (RP);
- The cost plus method (C+);
- The comparable return method (TNMM);
- The profit distribution method (PS).

Provided that the methods used suit with the «arm's length» principle, the OECD guidelines allow the use of several of these methods simultaneously or methods that are not defined or regulated by law.

International experience shows that this usage of particular methods contributes to difficulties with its execution (for example, the use of the «cost plus» method, when difficulties appear due to differences in the accounting systems of expenditures in different countries and the General distribution of indirect costs in relation to the controlled transaction). The legislation of many countries gives preference to the method of profit distribution when evaluating and determining prices for intangible assets. The OECD is also currently considering the use of the «method of discounting future income».

General approaches and principles of taxation to be used and changed when developing a mechanism for taxation of agents and subjects of the electronic economy:

1. For taxation of digital economy entities in the new conditions, there is no need to develop additional fees and taxes, it is enough to change the existing mandatory payments;
2. There is no need to lower rates and tax benefits;
3. For correct taxation, it is necessary to revise the concept of «permanent establishment»;
4. When the tax is assessed is not a type and cost of the product that is assessed, but the type of transferred rights and permission (if any) for these products;
5. In the e-economy segment, tax authorities should use specialized methods and means of tax control, since traditional, widespread tax control in this case is unreliable and not effective;
6. An Electronic product should be taxed at the legislative level as a service, not as a product;
7. According to the method the location of the buyer, taxes on consumption;
8. Development of documentation on the tax procedure is mandatory for business activities in the digital economy;
9. Continuous improvement of the taxation mechanism for digital economy entities is required.

The key factors contributing to the use of opportunities for understating the tax base are shown in Figure 1. The elimination of key factors that contribute

to understating the tax base is focused on using the definition of tax jurisdiction. Two approaches are used to determine tax jurisdiction, as shown in Table 1.

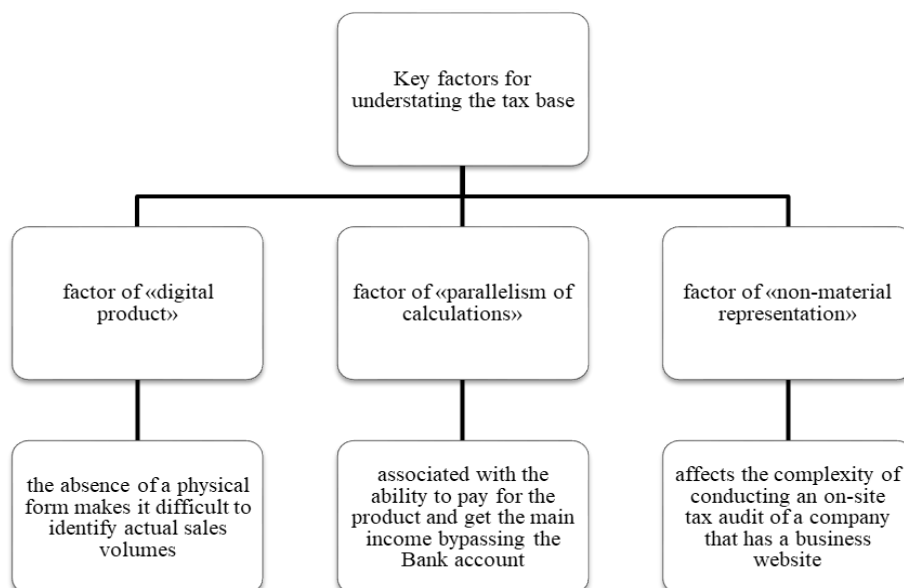


Figure 1 – Key factors for understating the tax base in the digital economy
Source: Koren, 2010

Table 1 – Relations of an economic entity in the form of approaches to tax jurisdiction

Name of the approach	Depending on the permanent establishment	Depending on the territory
Description of the approach	Is that the place of registration of the entity's activity located in one state (country), through which commercial and financial operations of an enterprise that is a person with a permanent residence (namely, a resident) of another state are carried out	This approach assumes that all income (expenses) of an economic entity arising in the place of this jurisdiction are subject to mandatory taxation:
The criteria approach	- availability of tangible assets used for profit-making and payment; - checking the dependency of agents, including management.	- there is no dependence on nationality and residence status.

Source: Collin & Colin, 2013

In the case of taxation of digital services in e-Commerce, the question is which of these approaches to taxation best meets the specifics of the digital economy and e-Commerce. For all e-Commerce, except retail trade in digital goods, the possibility of taxation of online trade is technically feasible. The distribution and development of effective administrative procedures within the taxation of electronic Commerce is not a simple task. Developers of this policy need to prescribe in such administrative procedures a direct solution to the main threat to state tax authorities from the distribution of digital goods. The European

Commission has developed and proposed legislation that allows avoiding tax evasion in cases of paying taxes on the purchase of electronic digital goods, but it is not yet clear in the procedures to what extent the developed procedures will be effective in the process of justifying the receipt of tax revenues from the retail sale of digital goods.

Various arguments in favor of granting taxpayers preferential tax treatment for retail e-Commerce have been discussed in the specialized literature, but they are not suitable for providing a convincing case of legislative granting of tax preferences for digital e-Commerce. One possible argument in this case is

in favor of providing preferential tax treatment for retail e-Commerce, which is not yet analyzed in the literature during this period, that the possibility of granting preferential tax to e-Commerce will lead to an increase in the degree of competition in the product market. The disadvantage of such an agreement is also that the cost increases for a certain unit of delivery for individual digital goods sent online, when compared with goods purchased in stores, considering the overall welfare effect of such a preferential tax regime, you can determine its ambiguous effect. The overall welfare effect remains to be analyzed, but it is not determined under which conditions it will be positive or negative (Rasmussen, 2004: 27).

The tax proposal of Goedel & Miller is that there is no final and feasible orderly business tax system that can collect the corresponding positive returns. This means that taxpayers are not required to pay more taxes than they are. In today's world of less-than-perfect information and diverse expectations that the tax code will continue to grow, the government is trying to eliminate the connection of loopholes that constantly arise and increase due to the inability to foresee and specify all possible unforeseen circumstances, situations. In doing so, it explores the business paths that organizations use to avoid taxation.

Proving this proposal by Goedel & Miller is more difficult than asserting it, but the analysis of the modern combination of non-arbitrage analysis together with the tax code provides a real clue. To begin with, because there is no explicit arbitrage analysis, the value of the firm's income (profit) is a function of the total cash flow, along with the forms in which it operates, which include depreciation charges, capital gains.

Calculating prices and costs for each of them, the organization will thus present itself to fully maximize its value. Ignoring organizational costs, organizations then combine, divide, and reorganize (transform) into entities with different tax rules and tax regimes to minimize tax (Ross, 1988: 132).

In particular, Belgian scientists-experts of the Eschman Institute suggest the development of the implementation of a bitwise tax. This involves paying for the specified amount of transmitted information and limited traffic on the counter. According to the Belgian Ministry of communications, this country's tax revenue in the digital economy could amount to about 4% of Belgium's GNP if the tax rate was \$ 1 per 100 megabits of information. The experience of France suggests considering the possibility of mandatory state certification of retail Internet

trading companies for their subsequent taxation. For this purpose, a specially designed «identification mark» was proposed for companies that confirm the provision of the necessary guarantees for tax transparency and technical and technological security when making payments for services using Bank cards (Rodina, 2010: 165).

Conclusion

The emergence and increase in the growth of settlement monetary transactions using electronic monetary resources as means of payment for online services, goods, and work occurred due to the rapid development of digital information technologies, which led to the widespread spread of universal store sites, auctions on the Internet, the emergence of corporate websites of organizations, and electronic settlements. The popularity of online sales is steadily increasing. The benefits of such trading are obvious to both sellers and buyers. The price in an online store is more favorable to the buyer, because sellers can save on renting retail space, paying for maintenance of premises and on the labor of staff, their price is lower than in conventional stores. For buyers, buying goods online at such a low price allows you to save time on the search and subsequent delivery of the ordered product. After selecting a product, the user can specify the delivery of the selected product to the door. Transactions with electronic money are performed instantly online, which reduces time costs. The time limit is only possible due to the speed of the payment system when making external payments.

National tax authorities do not have direct instruments for the implementation of the fight against tax avoidance and evasion organizations from paying taxes. They are focused on existing gaps in national tax legislation that occur due to changes in the dynamics of economic and financial globalization. The Organization for Economic Co-operation and Development and the Group of twenty have already joined together in an equal partnership to tackle the international problems of tax base erosion and profit redistribution. Their initiative action Plan allows more than 100 countries of the world, both developing and developed, to develop and implement rules aimed at ensuring that the places where profits are generated and taxed correspond. This will change the course of the international tax environment for companies in such areas as planning, provision and budgeting.

However, different interpretations of standards increase the risks of increasing global tax competition

between countries, as well as the risk of increasing the tax burden on organizations. These challenges can be addressed with the participation of the OECD action Plan and the G20 developing countries and the private sector. The plan encourages other international tax reforms that will support global growth and development.

A key issue is tracking the effectiveness of tax rates set for large international corporations. In terms of the drawback, it is the understatement of the severity of tax procedures, including transfer pricing. Increasing tax

revenues to the budget is a priority for governments, but tax rates are also linked to the volume of attracting foreign investment. The competitiveness of tax rates also affects the retention of their own investors.

In conclusion, we can conclude that globalization leads to a change in attitudes to the digital economy and cryptocurrencies, and it requires amendments to the legislation. The development of common standards for taxation in the digital economy will allow each state to make changes to existing tax legislation at the national level.

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EXAMINING THE STATE OF INFRASTRUCTURE DEVELOPMENT IN SUB-SAHARAN AFRICA

Infrastructure services are not only crucial for enhancing the welfare of the people but to also foster economic growth and development. Despite these essential services, there is a glaring infrastructure gaps in Sub-Saharan Africa more than any other region in the world. In the light of this and measurement problems associated with infrastructure development, it is therefore necessary to highlight the state of infrastructure development in SSA. This study examines the state of infrastructure development in SSA by considering 43 nations over the period of 2000 to 2018. Infrastructure development was proxied by the composite infrastructure index which include both the physical and social infrastructure. The study employed Principal Components Analysis (PCA) in building the aggregate or composite index, and descriptive statistics, stylized facts and correlation analysis were employed for the analysis of the data. Findings from this study reveal that infrastructural development has improved significantly in SSA for the period of study even though this is very low compare to the development attained in other regions of the world, and most of the improvement are from physical infrastructure, most especially telecommunication sector, and to a lesser degree, in health and water infrastructure. The study therefore recommends that stakeholders should engage in policies design that will improve infrastructure development in SSA most especially for the low income countries as majority of them were found at the bottom of ranking. This will help in closing the wide gap of inequality in access to infrastructure services among the SSA countries and other developing countries in other regions of the world.

Key words: Infrastructure development, Composite Infrastructure Index, Principal Components Analysis, Physical and Social Infrastructure.

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Сахараның оңтүстігіндегі Африкадағы инфрақұрылымның даму жағдайын зерттеу

Инфрақұрылым адамның әл-ауқатын жақсарту үшін ғана емес, сонымен бірге экономикалық өсу мен дамуды ынталандыру үшін де маңызды. Осындай маңыздылыққа қарамастан, Сахараның оңтүстігіндегі Африкада (СОА) әлемнің кез келген аймағына қарағанда инфрақұрылымдық кемшіліктер бар. Осыған байланысты, сондай-ақ инфрақұрылымды дамытумен байланысты өлшеу проблемаларын шешу үшін СОА-да инфрақұрылымның даму жағдайын анықтау қажет. Бұл зерттеу 2000 жылдан 2018 жылға дейінгі 43 елді қамтитын СОА-дағы инфрақұрылымдық даму жағдайын зерттейді. Инфрақұрылымның дамуы физикалық және әлеуметтік инфрақұрылымды қамтитын құрама инфрақұрылым индексімен анықталады. Зерттеуде жинақталған немесе құрама индексті құру үшін негізгі компоненттер анализі (PCA), ал деректерді талдау үшін сипаттамалық статистика, стильдендірілген фактілер және корреляциялық талдау қолданылды. Зерттеудің нәтижелері СОА-дағы инфрақұрылымның дамуы зерттеу кезеңінде едәуір жақсарғанын көрсетті, дегенмен бұл әлемнің басқа аймақтарында қол жеткізілген дамумен салыстырғанда өте төмен деңгей, ал жақсартулардың көп бөлігі физикалық инфрақұрылыммен байланысты, әсіресе телекоммуникация секторы және аз дәрежеде денсаулық сақтау және сумен қамтамасыз ету инфрақұрылымында. Осылайша, зерттеу мүдделі тараптарға СОА елдерінде, әсіресе табысы төмен елдерде инфрақұрылымның дамуын жақсартатын саясатты әзірлеуге қатысуды ұсынады, өйткені олардың көпшілігі рейтингтің соңында тұр. Бұл СОА мен әлемнің басқа аймақтарындағы дамушы елдер арасындағы инфрақұрылымдық қызметтерге қол жетімділіктегі елеулі теңсіздіктерді жоюға көмектеседі.

Түйін сөздер: инфрақұрылымды дамыту, инфрақұрылымның құрама индексі, негізгі компоненттерді талдау, физикалық және әлеуметтік инфрақұрылым.

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Изучение состояния развития инфраструктуры в Африке к югу от Сахары

Инфраструктура имеет решающее значение не только для повышения благосостояния людей, но и для стимулирования экономического роста и развития. Несмотря на это важнейшее значение, в Африке к югу от Сахары (АЮС) наблюдаются явные пробелы в инфраструктуре больше, чем в любом другом регионе мира. В свете этого, а также проблем измерения, связанных с развитием инфраструктуры, необходимо определить состояние развития инфраструктуры в АЮС. В этом исследовании изучается состояние развития инфраструктуры в АЮС, которая включает 43 страны, за период с 2000 по 2018 год. Развитие инфраструктуры отражается составным индексом инфраструктуры, который включает как физическую, так и социальную инфраструктуру. В исследовании использовался анализ основных компонентов (PCA) для построения агрегированного или составного индекса, а для анализа данных использовались описательная статистика, стилизованные факты и корреляционный анализ. Результаты этого исследования показывают, что развитие инфраструктуры в АЮС за период исследования значительно улучшилось, хотя это очень низкий уровень по сравнению с развитием, достигнутым в других регионах мира, и большая часть улучшений связана с физической инфраструктурой, особенно в секторе телекоммуникаций и, в меньшей степени, в инфраструктуре здравоохранения и водоснабжения. Таким образом, исследование рекомендует заинтересованным сторонам участвовать в разработке политики, которая улучшит развитие инфраструктуры в странах АЮС, особенно в странах с низким уровнем дохода, поскольку большинство из них находятся в нижней части рейтинга. Это поможет ликвидировать значительный разрыв в неравенстве доступа к инфраструктурным услугам между странами АЮС и другими развивающимися странами в других регионах мира.

Ключевые слова: развитие инфраструктуры, составной индекс инфраструктуры, анализ основных компонентов, физическая и социальная инфраструктура.

Introduction

Most existing literature have emphasized the important of infrastructure as a significant factor in supporting economic growth and development various countries across the world. Improving infrastructure services such as energy, education and health are not only enhancing the welfare of the people but also foster economic growth and development. Availability of infrastructure unlocks the economic growth and social benefits and progress. Infrastructure enhances the provision of the fundamental basis for a modern functioning society and economy (Jenkinson et al., 2017).

However, the provision of infrastructure services to meet the needs of the users has become one of the main problems of economic development globally, many countries in both the developed and developing countries have been paying insufficient attention to the maintenance and expansion of their infrastructure assets which create economic inefficiencies and allowing critical systems to erode. Actually, there is a glaring infrastructure gaps in the developing countries most especially in SSA but advanced economies are also not in exception (Woetzel et al., 2016). Huge infrastructure deficit

has been generally observed as one of the main obstacles that hinder the growth and development of the SSA. There is no region in the world that lack infrastructure and need more crucial and potentially transformational than in SSA (Foster & Briceno-Garmendia, 2010).

However, despite these challenges, infrastructure has been one of the major factors responsible for improved growth in the last two decades in SSA which still has the potential to contribute more in the future if the region acquires more critical and modern infrastructure that can aid economic growth and development (Infrastructure Consortium for Africa- ICA, 2010). Also, Africa Development Bank – AfDB (2018) stated that the recent improvement in economic growth in Africa was largely attributed to the investment in infrastructure which still has the potential to contribute even more. Even though there are some countries in SSA that have made a great effort toward improving their infrastructure networks but considering the competitiveness at regional level, SSA performs below the rest of the regions globally. This is largely associated with the huge deficit in the quality, quantity, and ease of accessing infrastructure services (AfDB, 2018).

In the light of these fundamental issues raised on the importance of infrastructure, it is therefore necessary to highlight the state of infrastructure development in SSA. Inadequate knowledge on the level of infrastructure development in the region will hinder the stakeholders to be aware of the status and progress of various infrastructure services and policies to be put in place in order to boost infrastructure development as well as the sectors and projects to be prioritized over the coming years.

To address the problem of infrastructure deficits in SSA, a considerable number of literature have investigated the economic benefits of infrastructure in the region. Also, studies have proxied infrastructure development with investments in infrastructure which may not reflect the actual infrastructure development because of inefficiency and corruption in the region (Randolph et al., 1996; Dao, 2008; Valila et al., 2010). However, available evidence on the state of infrastructure development in SSA are mostly from international organization reports such as AfDB and WEF. In addition, studies such as Akanbi (2013), Onikosi-Aliyu (2014) and De (2010), proxied infrastructure development with the combination of power, telecommunication and transport infrastructure (physical infrastructure) through principal component analysis (PCA), these studies have paid less attention to the social infrastructure, they have largely ignored the fact that physical infrastructure alone is inadequately means infrastructure development, it can only means a necessary but not sufficient condition.

However, despite these studies, there are still gaps that are needed to be filled, and to the best of my knowledge, no study has measured and incorporated both the indicators of physical and social infrastructure in the measurement of infrastructure development in SSA. It is an attempt to fill these gaps that prompt this study, which has the objective of including social infrastructure to the composite infrastructure index to proxy infrastructure development in SSA.

Specifically, in relation to the core issues raised above, objectives of the study include: investigating the state of infrastructure development in SSA in the last two decades; comparative analysis of the sub-regional infrastructure development in SSA; comparing the outcome of the composite infrastructure development index in the present study with that of African Infrastructure Development Index (AIDI); examining the relationship between the outcome of the composite infrastructure development index in the present study with AIDI. The remainder of this study is organized as

follows: Section two presents the review of relevant literature; Section three presents the details of the methodology employed in this study; Section four presents and evaluates the results; and Section five presents the conclusion and recommendations of the study.

Literature Review

Conceptual Review

Infrastructure is defined as the totality of those buildings, installations and communication networks require for supplies, especially in relation to the movement of goods and messages (Schneider & Jager, 2001). The word 'infrastructure' is originated from the Roman Languages, and since then the concept has been widely used till today, even though it is very difficult to find a generally accepted definition of infrastructure (Jochimsen, 1966; Snieska & Simkunaite, 2009).

Conventionally, infrastructure can basically be classified to two groups, namely; physical and social infrastructure. Physical infrastructure is referred to the infrastructure that aids economic activity, such as roads, highways, railroads, airports, sea ports, electricity, telecommunications. This is also regarded as physical infrastructure, while social infrastructure is regarded as the facilities that stimulate health, education and cultural standards of the population (Snieska & Simkunaite, 2009).

The above definitions of infrastructure are therefore implying that infrastructure involves facilities that aid both the economic and social activities of the society which include electricity, transport, telecommunication, health, education, water and sanitation etc. Infrastructure development therefore involves the construction and improvement of foundational services with the aim of promoting economic growth and the quality of life. It plays important role in the development of any economy but requires large capital installation or large social overhead capital with long gestation period but the benefits have multiplier effect in the economy which is essential for the improvement of the welfare of the people and economic development.

Theoretical Review

Although there are theories on infrastructure demand models which include the theory of demand and consumption theory based on the previous studies (Ziramba, 2008; Amusa et al., 2009; Hussain et al., 2013; Kwakwa, 2017), but this study is not aware of the existence of any received theory on infrastructure supply model. Thus, since infrastructural development is a form of investment

in real assets, infrastructural development is treated as investment and accelerator theory of investment is considered to be more relevant for this study.

The theory was developed by Nixon and Aftalion before Keynesian economics, but become widely known in twenty century when the Keynesian theory dominated the discipline of economics (Ganti, 2019). Accelerator theory is a special case of the neoclassical theory of investment which is based on the notion that capital stock is determined by the level of output (Eklund, 2013). That is, there is a fixed relationship between the capital stock and output level. The accelerator theory is a simple model that involves the kind of feedback from current output to investment and it is based on the assumption that capital-output ratio is roughly constant. This means that the capital stock at any period t is proportional to the level of output in t . That is:

$$K_t = \sigma Y_t \quad (1)$$

where K_t is the capital stock, Y_t is the level of output and σ is the capital-output ratio. Equation (1) is simply a well known simple accelerator principle where the capital stock is determined by the level of output.

It can therefore be concluded that infrastructure development is majorly influenced by the level of output, this is in line with the Equation (1). Apart from the theoretical evidence, gross domestic product (GDP) is commonly used in infrastructure studies as a measure of the level of output (Dao, 2008; De, 2010; Akanbi, 2013; Steckel et al., 2017).

Empirical Review

Cross-Country Studies on Infrastructure

Large number of the studies on infrastructure focuses more on measuring the growth and development gains from infrastructure. Although there is some literature on infrastructure financing, but the literature on infrastructure development and financing or determinants of infrastructure development is thinner, most especially in the SSA. For instance, Dao (2008) examines the determinants of infrastructure indicators in developing countries. The study applies the least-squares estimation techniques in a multivariate linear regression and found that infrastructure indicators are influenced by the share of public expenditures on pensions in GDP, public spending for education as a percentage of government expenditures, the share of public spending for health in GDP, public saving (% of GDP), and civil service wages as a fraction of government spending. The study also revealed that only private spending for telecommunications (%

of GDP) was statistically significant in explaining cross-country variations in the number of fixed and mobile telephone lines.

De (2010) provides a comprehensive and empirical analysis of the linkages between governance, institutions, and regional physical infrastructure. The study covers the period of 1991 to 2006 for 124 countries in Asia, Europe and Latin America. It estimated the empirical relationship between governance and infrastructure using panel data. The model of the study also considered per capita income, population, trade openness, manufacturing value added and geographical regions as the determinants of infrastructure apart from the governance. The study employed Generalized Method of Moments to address the problem of endogeneity among the variables. The empirical results indicated that governance and institutions are important determinants of regional infrastructure development. Specifically, an improvement in governance will leads to 1 to 1.5 increase in regional infrastructure.

Donaubauer et al. (2016) assess the possible complementarities between aid and foreign direct investment by identifying the transmission mechanisms through the index of infrastructure. Apart from the aid and FDI models, one of the specific objectives in their study is the determinants of infrastructure development (Transportation, Communication, Energy and Finance). They used a composite infrastructure index generated through PCA for 81 aid-recipient countries that comprises both the developed and developing countries, for the period of 1990–2010. The study employed 3SLS method to estimate the model and found strong and robust evidence that aid is one of the key determinants of the recipient countries' infrastructure development. The study therefore concluded that, carefully selected aids will help in improving the development of economic infrastructure.

Steckel et al. (2017), employed both the cross-section and time series data of 154 countries over the period of 1990 to 2010, empirically examine the determinants of access rates to the key infrastructure services such as electricity, telephony services, water and sanitation. The study used both descriptive and inferential (fractional logit model) statistics to analyze the trends and global patterns in access to these infrastructure services. The findings from the study showed that population density and GDP are the most crucial determinants of infrastructure services. Also, for all forms of infrastructure that are considered, it was found that access levels are higher in urban than rural areas, this implies that

the urban are given more priority than rural areas in infrastructure buildup. In addition, the result revealed that water has the highest in terms of considering the contributions of infrastructure indicators to development and access levels. This is followed by sanitation, electricity and telephony in sequence order.

In a study conducted by Akanbi (2013), the determinants of physical infrastructure that would promote the productive potential of SSA were empirically examined. The study made use of a panel of 21 selected SSA countries covering 2000 to 2010, employing 2-stage least squares (2SLS) estimation methods. Infrastructure variable was derived from the three physical infrastructure stocks (electricity, road and telecommunication) that were generated with the use of PCA, and governance was proxied by the worldwide governance indicators. The findings from the study revealed that government capital expenditure, real GDP, inflation and external balance are important drivers of physical infrastructure in SSA.

Country-Specific Studies on Infrastructure

Perkins et al. (2005) analyze long-term trends in the development of South Africa's economic infrastructure and discuss their relationship with the country's long-term economic growth. Data on energy, transport and telecommunication were utilized for the analysis of the study. Evidence from the study showed that there was potential simultaneity between GDP and specific types of infrastructure, and concluded that adequate investment in infrastructure could help to create opportunities for promoting economic growth. The study therefore suggested that policymakers should embark on the right type of infrastructure at the right time.

Nnansseh & Akpan (2013) assess the impact of internally generated revenue (IGR) on infrastructural development in Akwa Ibom State, Nigeria. Specifically, the study examined the extent to which IGR contributed to the provision of infrastructure such as electricity, road and water. The study made use of secondary data that were analyzed with descriptive and simple regression techniques. The findings from the study showed that IGR has positive contribution to the provision of electricity, roads and water but the contributions were skewed more to roads than electricity and water.

Onikosi-Aliyu (2014) investigates the impact of infrastructure on employment and economic growth in Nigeria between 1970 and 2010. Apart from the main objective of the study, one of the specific objectives of the study was to examine

the determinants of infrastructure in Nigeria. In the infrastructure model, economic growth, real interest rate, public debt, recurrent and capital expenditure were identified as the determinants of infrastructure in Nigeria. The infrastructure variable was measured by a linear combination of three main economic infrastructures (electricity, transportation and telecommunication) using PCA. The study used secondary data sourced from Canning (1999), Central Bank of Nigeria and the National Bureau of Statistics, and employed 2SLS method to estimate the models. The results from the study showed that the major determinants of infrastructure in Nigeria are real interest rate, capital expenditure and recurrent expenditure of the government. The study further showed that both real interest rate and capital expenditure negatively impacts infrastructure in Nigeria while the recurrent expenditure positively impact infrastructure.

Li et al. (2017) investigate the critical factors that influence municipal infrastructure development in urban China. Based on the information on five main urban infrastructure systems (energy efficiency, sustainable urban transport, waste management, water/wastewater, and urban ecosystem management) and ten municipal composite infrastructure indexes (per capita road area, road network density, buses per 10,000 residents, drainage pipe density in built-up areas, water coverage, gas coverage, per capita gas consumption, green space ratio in built-up areas, green space coverage in built-up areas and water flush toilet ratio in built-up areas), they employed factor analysis (FA) to generate the aggregate index for the municipal infrastructure development of the 113 cities in China. The study identified urban population, per capita GDP, per capita maintenance capital, fixed asset investment, industrialization and industry structure level as determinants of municipal infrastructure development. The stochastic model STIRPAT (stochastic impacts by regression on population, affluence and technology) was employed to estimate the model. The findings from their study revealed that the municipal infrastructure development in urban China was primarily determined by income, industrialization and investment.

Assessing the impact of internally generated revenue on infrastructure development in Lagos State, Nigeria, was conducted by Olayinka & Phebe (2019). The researchers adopted non-experimental research design in carrying out the study and secondary data were used. The set of data used for the study were sourced from State and Local Government Program reports, Lagos State Ministry

of planning and budgeting with detailed report of IGR and Infrastructural Development Budget from 1996 to 2015, spanning a period of 20 years. The study employed OLS to analyze the data collected. The result of the analysis revealed that IGR positively impact infrastructural development. The results further showed that taxes, earnings and sales, which are the major components of internally generated revenue, did not have any impact on the infrastructural development while licenses, fines and fees had.

Methodology

Nature of the Data

The secondary sources of data on various indicators of infrastructure across 43 countries in SSA, from different sources for the period of 2000 to 2018 are deployed. The list of the countries and the period covered were both dictated by data availability.

Population and Sample Size

SSA has a total number of 49 countries, thus, the total population of the study consists of all the SSA countries. Therefore, the sample for this study consists of 43 SSA countries selected from the total 49 SSA countries. These include the following countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cape Verde, Cameroon, Central African Rep., Chad, Comoros, Congo DR, Congo Rep., Cote d'Ivoire, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Data Measurements and Sources

Energy infrastructure is measured by the population with access to electricity (in percentage) to determine infrastructure development in energy sector in SSA, rather than electricity generation per 1,000 people. The reason is that the percentage of the population with access to electricity measures the actual number of the people with access to electricity rather than generation which may not eventually lead to accessibility. The data was sourced from the World Bank's WDI (2019).

Basically, there are three indicators of measuring telecommunication which include mobile lines, fixed lines and access to internet. Thus, all the three indicators of telecommunication will be aggregated into a single composite index through PCA to capture the infrastructure development in the

telecommunication sector. These are measured by the mobile phone subscribers per 1,000 people, fixed telephone subscriptions per 1,000 people and fixed broadband internet subscribers per 1000 people. The justification for these indicators is because of their rapid improvement after the liberalization in most of the countries in SSA, in addition to data availability. The data was sourced from the International Telecommunication Union (2019).

Transport infrastructure is measured as the road density (km of road per 100 sq. km of land area) to determine infrastructure development in the transport sector. The road network consists of all roads in the country such as motorways, highways, main or national roads, secondary or regional roads, and other urban and rural roads (World Bank, 2019). We are aware of other measurements of transport infrastructure but availability of data limits us to the use of road density. The data is sourced from the International Road Federation (2019).

Health infrastructure is proxied by the number of hospital beds per 100,000 people, measuring infrastructure development in health sector. It is used to indicate the availability of inpatient services. Although, we are aware of other measurements such as number of hospitals per number of people but this is informed by the availability of the data. Data on hospital beds per 100,000 people is sourced from the World Health Organization (2019).

Education infrastructure is measured by the number of classes per 100 pupils in primary school, measuring infrastructure development in education sector. This is used as a proxy for infrastructure development in education sector and the choice not only due to the availability of data but also as a result of the fact that the primary education is the basis or foundation of education attainment. This further shows the capacity of each class and the available facilities it contains. The variable was sourced from the United Nations Educational, Scientific and Cultural Organization (2019).

Water infrastructure is measured as the percentage of people with access to improved water sources, measuring infrastructure development in the water sector. The justification for this is that, apart from availability of the data, it has been widely used as a measurement for infrastructure development by many previous studies (Gopalan & Rajan, 2016; Steckel et al., 2017; Gomez et al., 2019) and international organizations such as World Economic Forum (WEF) and Africa Infrastructure Development Index (AIDI). This variable was also sourced from the World Bank's WDI (2019).

Infrastructure development is proxied by a composite infrastructure index, which involves a linear combination of all the aforementioned six infrastructure indicators of both economic infrastructure (energy, roads and telecommunication) and social infrastructure (health, education and water). The approach adopted in constructing an aggregate or composite index that combines the six infrastructure stocks is PCA method and this had similarly been used in the previous studies (Akanbi, 2013; Onikosi-Aliyu, 2014; De, 2015; Sama and Afuge, 2016; David, 2019).

Estimation Technique for Infrastructure Development: Principal Components Analysis (PCA)

The PCA is a process of taking high-dimension sets of indicators and transforming them into new indices that retain information on a different dimension and are mutually not correlated. This procedure reduces the set of observed variables into principal components which capture information from the original set of variables as much as possible (Akanbi, 2013). The justification for using PCA to measure index is because it uses optimal weight which devoid researcher's bias unlike other methods of measuring index, such as the UNDP methodology and the distance-based method, where the weight allocated to the dimensions is subjective and the value of the resultant index is restricted between 0-1 or 1-100 (Shlens, 2003).

For instance, the result for the component of infrastructure shows that the first factor or principal component has an eigenvalue of 3.491 that explains 58 percent of the total variation. The second component has an eigenvalue of 0.845 that explains 14 percent of the total variation and the third component has an eigenvalue of 0.581 that explains 9 percent of the total variation, and so on. Since the first factor or principal component has an eigenvalue larger than 1 and explains the highest percentage of the total variation, we chose the first principal component for making a composite index to represent the combined variance of various aspects of infrastructure development captured by the six infrastructure variables.

From the results, the first eigenvectors were used as the required weights. Thus, each of this weight was multiplied by the correspondent indicators and added together to derive the aggregated index for infrastructure development. In other words, this can be explained by following this linear combination:

$$K = \alpha_1 \text{ ene} + \alpha_2 \text{ tel} + \alpha_3 \text{ tra} + \alpha_4 \text{ heal} + \alpha_5 \text{ edu} + \alpha_6 \text{ wat} \quad (2)$$

Where K is the aggregate index for infrastructure development, $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ and α_6 are the eigenvectors (weights) from the PCA, and *ene* is energy, *tel* is for telecommunication, *tra* is transport, *heal* is health, *edu* is education and *wat* is water. These are the six synthetic composite index of infrastructure. Since physical and social infrastructure are the components of infrastructure development.

Therefore, this study employed PCA to generate the aggregate infrastructure development. Aggregating infrastructure development helps to reduce the measurement error related with a single-infrastructure indicator. This study made use of the Stata 14 software to generate the aggregate index for the variables required. From the result that was generated, the first principal component that account for the highest proportion of variance was extracted as the index of infrastructure development. The summary statistics of the first principal components that were used to generate the composite for composite infrastructure index are reported in the Table 1, while presenting the descriptive analysis in the next section.

Results and Discussion

Principal Components Analysis (PCA) Results

The derivation of infrastructure variables for this study involves a linear combination of six underlining infrastructure indicators – energy, transport, telecommunication, education, health and water, using PCA, the mechanism of which has been explained fully in Methodology. The results of this statistical exercise are shown in the Table 1 and then discussed.

Table 1 – Eigenvectors of Original Values

Composite Index Variables	Indicators	Weight
Infrastructure Indicators	ENE	0.463
	TRA	0.398
	TEL	0.454
	EDU	-0.257
	HEAL	0.409
	WAT	0.433

Notes: 1) compiled by the author
2) K is the composite infrastructure index, TEL is the Telecommunication infrastructure index, ENE is energy, TRA is transport, EDU is education, HEAL is health and WAT is water infrastructure.

Therefore, following the procedure in equation (2) where each of the weight generated in Table 1 is multiplied by the correspondent indicators and added together to derive the aggregate index for the variable under consideration. For instance, in order to compute the composite infrastructure index, the value of energy infrastructure for a particular country in a particular year is multiplied by its weighted value (0.463) plus the value of transport infrastructure for a particular country in a particular year multiplied by its weighted value (0.398) plus the value of telecommunication infrastructure for a particular country in a particular year multiplied by its weighted value (0.454) plus the value of educational infrastructure for a particular country

in a particular year multiplied by its weighted value (0.257) plus the value of health infrastructure for a particular country in a particular year multiplied by its weighted value (0.409) plus the value of the water infrastructure for a particular country in a particular year multiplied by its weighted value (0.433).

Trend Analysis of Infrastructural Development in SSA, 2000 – 2018

The aggregate or overall infrastructure development is presented in Panels I and II of Figure 1. The trend analysis of average infrastructure development in SSA countries between the year 2000 and 2018 is shown in the panel I, while Panel II shows the trend of average infrastructure development from year 2000 to 2018 for the SSA region.

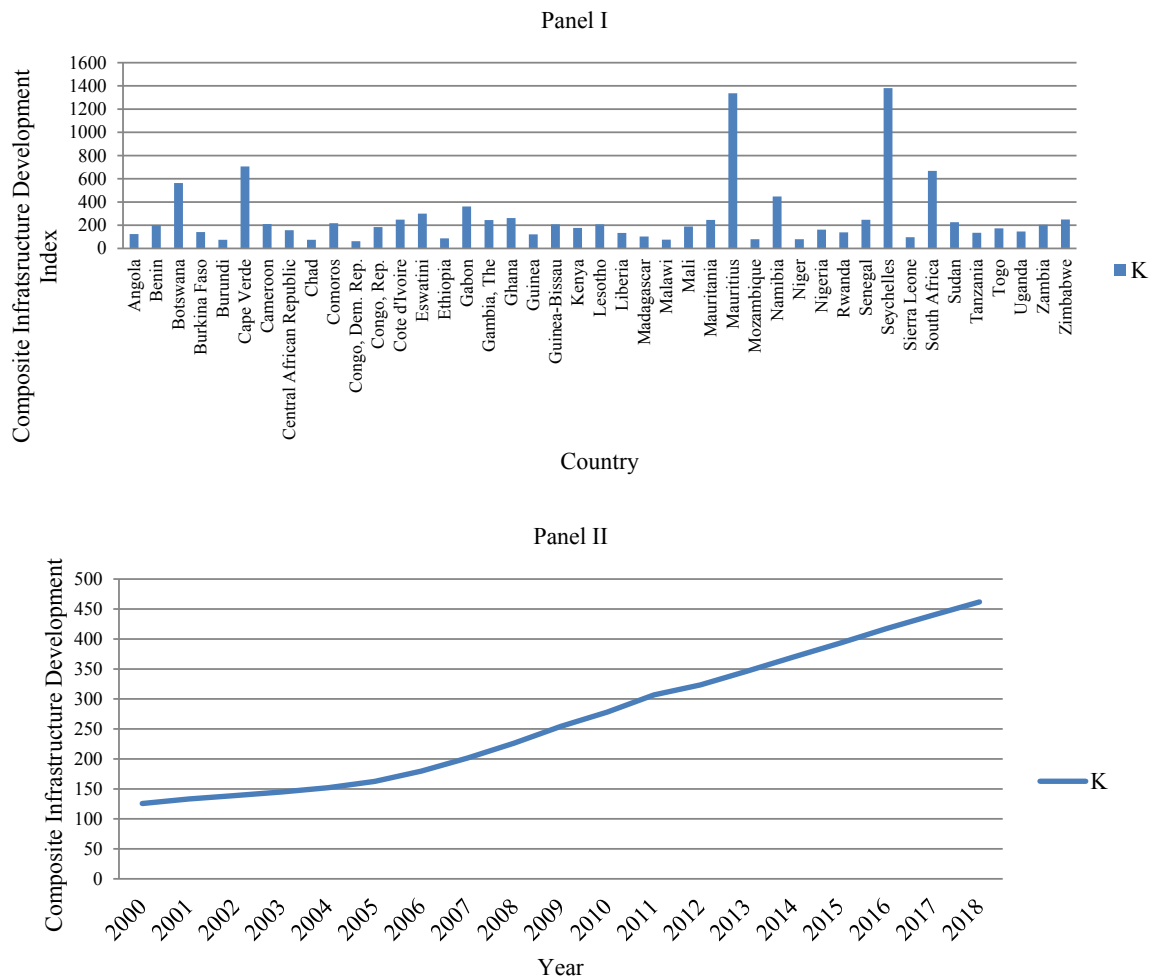


Figure 1 – Aggregate Trend Infrastructure Development in SSA (2000-2018)
 Note – compiled by the author

The results from the Figure 1 in Panel I bar diagram shows that Seychelles has the highest infrastructure development, followed by Mauritius, Cape Verde, South Africa, Botswana, Namibia, Gabon, Eswatini, Ghana and Cote d'Ivoire between 2000 and 2018. On the other hand, the last ten countries with the lowest infrastructure development in descending order include Congo D.R., Chad, Burundi, Malawi, Niger, Mozambique, Ethiopia, Sierra Leone, Madagascar and Guinea.

The result in the Panel II trend chart shows that the composite infrastructure development

stood at 126 in the year 2000, then, rose to 278 in 2010. This further increase and attain the highest index in 2018 with 462. This indicates that infrastructure development in SSA exhibit an upward trend between year 2000 and 2018.

Sub-Regional Comparison of Infrastructural Development in SSA

Comparison of aggregate or overall infrastructure development across four sub-regions and average infrastructure development in SSA is shown in Figure 2.

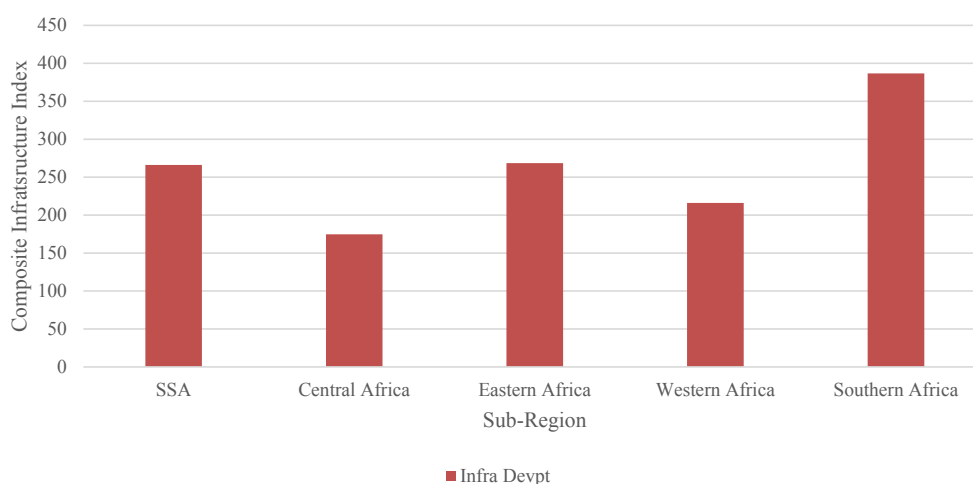


Figure 2 – Sub-Regional Analysis of Infrastructure Development in SSA, 2000-2018

Note – compiled by the author

The results from Figure 2 show that Southern Africa records the highest performance in infrastructure development, followed by Eastern Africa, Western Africa, and Central Africa. Using the average infrastructure development for SSA countries from year 2000 to 2018 as a benchmark, this shows that both Southern and Eastern Africa perform better, while Central and Western Africa perform below the benchmark. This is also supported by the theoretical expectation that the level of economy of a country influence its infrastructural development as majority of the countries in both Southern and Eastern regions are in the categories of lower-middle income and upper-middle income economies, while majority of the countries in both Western and Central Africa regions are in the categories of low-income and lower-middle income economies.

Ranking of Infrastructure Development in SSA

Table 2 shows the composite infrastructure development index (K) ranking for the selected 43 SSA countries, from 2000 to 2018 and their rank positions. For proper understanding of the level of infrastructure development in SSA, the study goes further to compare the outcome of the composite infrastructure development index with the Africa Infrastructure Development Index (AIDI) ranking in 2018.

The results from table 2 revealed that the top ten countries based on the present study infrastructure development index include Seychelles in the first position, followed by Mauritius in the second position, then Cape Verde, South Africa, Botswana, Namibia, Gabon, Eswatini, Ghana and Zimbabwe in the tenth position. This is also corroborated with the AIDI ranking which showed that the first country in term of infrastructure development is

Seychelles, followed by South Africa, Mauritius, Cape Verde, Botswana, Gabon, Ghana, Namibia, Gambia and Senegal in the tenth position. The little discrepancy maybe as a result of the indicators used

to compute the index by the AIDI which are mainly physical infrastructure, while the present study used a combination of physical and social infrastructure indicators.

Table 2 – Comparison of Infrastructure Development Ranking among SSA Countries between K and AIDI Rankings

Country	K (2000-2018)	AIDI
Angola	33	22
Benin	21	29
Botswana	5	5
Burkina Faso	29	23
Burundi	41	31
Cape Verde	3	4
Cameroon	17	21
Central African Republic	27	37
Chad	42	42
Comoros	16	15
Congo, Dem. Rep.	43	41
Congo, Rep.	23	24
Cote d'Ivoire	11	14
Eswatini	8	11
Ethiopia	37	40
Gabon	7	6
Gambia, The	14	9
Ghana	9	7
Guinea	34	27
Guinea-Bissau	18	34
Kenya	24	12
Lesotho	19	30
Liberia	32	33
Madagascar	35	39
Malawi	40	19
Mali	22	28
Mauritania	13	25
Mauritius	2	3
Mozambique	38	36
Namibia	6	8
Niger	39	39
Nigeria	26	17
Rwanda	30	20
Senegal	12	10
Seychelles	1	1
Sierra Leone	36	38
South Africa	4	2
Sudan	15	26
Tanzania	31	32
Togo	25	35
Uganda	28	18
Zambia	20	16
Zimbabwe	10	13

Note – compiled by the author based on Africa Infrastructure Development Index (AIDI)

Rank Correlation

In addition to the tabular comparison of the infrastructure development ranking among SSA countries, the study further examines the relationship between the present study ranking of infrastructure development among SSA countries and that of AIDI ranking. This is expressed in Spearman's correlation coefficient (r) as follows:

$$r = 1 - 6 \left[\frac{\sum d^2}{n(n^2 - 1)} \right] = 0.830 \quad (3)$$

where d = difference between ranks of corresponding variables K and AIDI

n = number of observation

The correlation coefficient (r) takes on values of -1 to +1. A perfect correlation of -1 or +1 implies

that there is exact linear relationship between the two groups. On the other hand, if the correlation is near to 0, this implies that no linear relationship exists between the two groups. The value of correlation coefficient (r) is 0.830, which shows a similarity in ranking between the present study and that of AIDI ranking. This implies that there is high relationship between the present study's ranking of infrastructure development among SSA countries and that of AIDI ranking.

Trend Analysis of the level of Infrastructure Development in Individual SSA Countries (2000-2018)

Since the main objective of this study is to measure the level of infrastructure development in SSA, to achieve this objective, Table 3 below shows the trend of infrastructure development in individual countries for the selected 43 SSA countries, covering 2000 to 2018 and the rank positions.

Table 3 – Trend of the State of Infrastructure Development in SSA

Country	Rank-2000	Country	Rank-2010	Country	Rank-2018	Country	2000-2018
Seychelles	1	Mauritius	(↑)1	Seychelles	(↑)1	Seychelles	1
Mauritius	2	Seychelles	(↓)2	Mauritius	(↓)2	Mauritius	2
Cape Verde	3	Cape Verde	3	South Africa	(↑)3	Cape Verde	3
South Africa	4	South Africa	4	Botswana	(↑)4	South Africa	4
Botswana	5	Botswana	5	Cape Verde	(↓)5	Botswana	5
Namibia	6	Namibia	6	Namibia	6	Namibia	6
Gabon	7	Gabon	7	Gabon	7	Gabon	7
Eswatini	8	Eswatini	8	Mali	(↑)8	Eswatini	8
Gambia	9	Gambia	9	Sudan	(↑)9	Ghana	(↑)9
Zimbabwe	10	Senegal	(↑)10	Zambia	(↑)10	Zimbabwe	10
Comoros	11	Zimbabwe	(↓)11	Mauritania	(↑)11	Cote d'Ivoire	(↑)11
Senegal	12	Cote d'Ivoire	(↑)12	Ghana	(↑)12	Senegal	12
Cote d'Ivoire	13	Ghana	(↑)13	Guinea-Bissau	(↑)13	Mauritania	(↑)13
Guinea-Bissau	14	Mauritania	(↑)14	Coted'Ivoire	(↓)14	Gambia	(↓)14
Ghana	15	Benin	(↑)15	Zimbabwe	(↓)15	Sudan	(↑)15
Lesotho	16	Congo, Rep.	(↑)16	Eswatini	(↓)16	Comoros	(↓)16
Sudan	17	Comoros	(↑)17	Senegal	(↓)17	Cameroon	(↑)17
Kenya	18	Cameroon	(↑)18	Central African Rep.	(↑)18	Guinea-Bissau	(↓)18
Congo, Rep.	19	Lesotho	(↓)19	Cameroon	(↓)19	Lesotho	(↓)19
Rwanda	20	Sudan	(↓)20	Lesotho	(↓)20	Zambia	(↑)20
Nigeria	21	Kenya	(↓)21	Togo	(↑)21	Benin	(↑)21
Benin	22	Guinea-Bissau	(↓)22	Uganda	(↑)22	Mali	(↑)22
Burkina Faso	23	Nigeria	(↓)23	Kenya	(↓)23	Congo, Rep.	(↓)23
Cameroon	24	Angola	(↑)24	Benin	(↓)24	Kenya	(↓)24

Country	Rank-2000	Country	Rank-2010	Country	Rank-2018	Country	2000-2018
Togo	25	Zambia	(↑)25	Liberia	(↑)25	Togo	25
Zambia	26	Togo	(↓)26	Burkina Faso	(↑)26	Nigeria	(↓)26
Burundi	27	Central African Rep.	(↑)27	Congo, Rep.	(↓)27	Central African Rep.	(↑)27
Sierra Leone	28	Mali	(↑)28	Comoros	(↓)28	Uganda	(↑)28
Guinea	29	Uganda	(↑)29	Tanzania	(↑)29	Burkina Faso	(↓)29
Mauritania	30	Tanzania	(↑)30	Rwanda	(↑)30	Rwanda	(↓)30
Angola	31	Guinea	(↓)31	Nigeria	(↓)31	Tanzania	(↑)31
Liberia	32	Rwanda	(↓)32	Ethiopia	(↑)32	Liberia	32
Tanzania	33	Burkina Faso	(↓)33	Gambia	(↓)33	Tanzania	33
Madagascar	34	Liberia	(↓)34	Guinea	(↓)34	Guinea	(↓)34
Mozambique	35	Madagascar	(↓)35	Madagascar	35	Madagascar	(↓)35
Central African Rep.	36	Sierra Leone	(↓)36	Chad	(↑)36	Sierra Leone	(↓)36
Uganda	37	Mozambique	(↓)37	Angola	(↓)37	Ethiopia	(↑)37
Congo, Dem. Rep.	38	Malawi	(↑)38	Niger	(↑)38	Mozambique	(↓)38
Niger	39	Burundi	(↓)39	Sierra Leone	(↓)39	Niger	39
Chad	40	Niger	(↓)40	Congo, Dem. Rep.	(↑)40	Malawi	(↑)40
Ethiopia	41	Chad	(↓)41	Malawi	(↓)41	Burundi	(↓)41
Malawi	42	Ethiopia	(↓)42	Mozambique	(↓)42	Chad	(↓)42
Mali	43	Congo, Dem. Rep.	(↓)43	Burundi	(↓)43	Congo, Dem. Rep.	(↓)43

Note – compiled by the author

The results from Table 3 show that infrastructure development ranking among the SSA countries for the initial year (2000), has Seychelles as the top performer, followed by Mauritius in the second position, then Cape Verde, South Africa, Botswana, Namibia, Gabon, Eswatini, Ghana and Zimbabwe in the tenth position. While the last ten include; Madagascar, Mozambique, Central African Republic, Uganda, Congo Democratic Republic, Niger, Chad, Ethiopia, Malawi and Mali. Based on our theoretical expectation, it is not surprising that all the countries in the top ten belong to the high income, upper-middle income and lower-middle income economies except Gambia which is in the category of low income economy. While all the countries in the last ten ranking belong to the low income economies. However, it is surprising to find a low income economy such as Gambia among the high ranked infrastructure development in SSA. This indicate that a low income economy like Gambia realize the important of investment in infrastructure so as to foster its economic performance.

Table 3 further shows the infrastructure development ranking among the selected SSA countries in 2010, the result shows that the top ten countries are; Mauritius, Seychelles, Cape Verde, South Africa, Botswana, Namibia, Gabon, Eswatini, Gambia and Senegal. Compare to the 2000 ranking, this shows that Mauritius overtakes Seychelles and emerges as the top performer, and Senegal moves to the top ten while Zimbabwe dropped out of the top ten to eleventh position. Apart from Mauritius and Senegal that moved up in the top ten, two other countries that performed brilliantly between 2000 and 2010 are Mauritania and Mali that moved up by 16 and 15 places respectively. Other countries that improved within this period are; Angola, Benin, Cameroon, Central African Republic, Congo Republic, Cote d'Ivoire, Ghana, Malawi, Uganda, Tanzania and Zambia. The last ten countries remain almost the same with 2000 except Liberia, Sierra Leone and Burundi that dropped to the last ten. Apart from these, Rwanda and Burkina Faso are among the noticeable countries dropped by 12 and 10 places

respectively. Other countries are; Comoros, Lesotho, Sudan, Kenya, Guinea-Bissau, Nigeria, Zambia, Guinea, Madagascar, Mozambique, Burundi, Niger, Chad, Ethiopia and Congo Democratic Republic.

The result of the 2018 infrastructure development ranking among the selected SSA countries shows that Seychelles returns back to the top from the second place in 2010 ranking, this is followed by Mauritius, South Africa, Botswana, Cape Verde, Namibia, Gabon, Mali, Sudan and Zambia. This shows that there are a lot of changes among the top ten countries in the 2018 ranking except Namibia and Gabon that maintained their 6th and 7th positions respectively. Apart from Mauritius and Cape Verde that dropped to the 2nd and 5th places respectively, it is interesting to know that a low income country such Mali has improved significantly from the last ten countries in 2000 to the top ten countries in 2018. Other countries that have improved in ranking include; Sudan, Zambia, Mauritania, Ghana, Guinea-Bissau, Central African Republic, Togo, Uganda, Liberia, Burkina Faso, Tanzania, Rwanda, Ethiopia, Chad, Niger, and Congo Democratic Republic. There is no much improvement among the last ten countries except Guinea and Angola that dropped to the last ten for the first time in the last eighteen years.

The result of the infrastructure development ranking for the overall years of consideration shows that Seychelles still maintained its first position, and as well as other countries in the top ten in 2000 except Ghana that moved to the 9th position, while Gambia was dropped to the 14th position. Other countries that have improved significantly within these periods include; Cote d'Ivoire, Mauritania, Sudan, Cameroon, Zambia, Benin, Mali, Central African Republic, Uganda, Tanzania, Ethiopia and Malawi. Apart from Gambia, other countries that dropped within periods include; Comoros, Guinea-Bissau, Lesotho, Congo Republic, Kenya, Nigeria, Burkina Faso, Rwanda, Guinea, Madagascar, Sierra Leone, Mozambique, Burundi, Chad and Congo Democratic Republic. The last ten countries show that there is no much difference from that of 2000 except both Guinea and Burundi that dropped to the last ten.

Considering the overall infrastructure development for the period of study, findings from this study show that infrastructural development has improved significantly in SSA for the period of study even though this is very low compare to the development in other regions of the world. Despite this, evidence of infrastructure development during the period of study shows that the region still has considerable potential for improving its

infrastructure. It is also necessary to clarify that most of the significant improvement are from physical infrastructure, most especially telecommunication sector, and to a lesser degree, in health and water sector.

Conclusion

In the light of the fundamental issues raised in the literature on the important of infrastructure to the economic growth and development in the world, and measurement problems associated with infrastructure development. It is therefore necessary to highlight the state of infrastructure development in SSA, where despite the huge infrastructure deficits, infrastructure has been one of the major factors responsible for improved growth recorded in the region in the last two decades. Inadequate knowledge on the level of infrastructure development in the region will hinder the relevant authorities to be aware of the status and progress of various infrastructure services and policies to be put in place in order to boost infrastructure development as well as the sector, facilities and sub-region to be prioritized over the coming years.

This study further contributes to the existing literature by examining the state of infrastructure development in SSA considering 43 countries covering 2000 to 2018. Infrastructure development was represented by the composite infrastructure index which include both the economic infrastructure (energy, transport and telecommunication) and social infrastructure (education, health and water). The study employed PCA in building the aggregate or composite index, and descriptive statistics, stylized facts and correlation were employed for the analysis of the data. The findings from this study therefore, reveal that infrastructural development has improved significantly in SSA for the period of study even though this is very low compare to the development attained in other regions of the world. It is also necessary to clarify that most of the significant improvement are from physical infrastructure, most especially telecommunication sector, and to a lesser degree, in health and water infrastructure. At the sub-regional level, the result further shows that there is a wide disparity in the distribution of infrastructure service.

Despite the difference in the methodologies employed by the present study and relevant organization such as Africa Infrastructure Development Index (AIDI), the results of our ranking are almost the same, even though there are some little differences which may be due to

the social infrastructure indicators included by the present study.

In line with the conclusions above, the study therefore recommends that stakeholders should engage in policies design (such as public private partnership, privatization) that will promote infrastructure development in SSA, most especially for the low income countries as majority of them were found at the bottom of ranking. Therefore, this will help in closing the wide gap of inequality in access to infrastructure services among the SSA countries. Similarly, at sub-regional level, this study advocates more efforts should be geared towards improving infrastructure development in Central and Western Africa regions as these two sub-regions are lagged behind compared to the Southern and Eastern Africa sub-regions. In addition, given the evidence

shown in the study that the average performances in some individual infrastructure (such as health, water and transport) are very poor, it is therefore recommended that special consideration should also be given to these sectors. Also, as evidence from the theoretical and empirical literature has shown that strength of the economy of a country determines its infrastructure development, it is highly recommended that the capital expenditure should be given a priority in the annual budgets of SSA countries and this must be judiciously used for the infrastructure sectors that will have a greater spillover effects on the economy. Finally, this study suggests that relevant organizations such as AIDI should include more social infrastructure indicators in their measurement so as to improve their measurements of infrastructure development.

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DEVELOPMENT OF DIGITAL TECHNOLOGIES FOR AGRIBUSINESS

The contribution of small and medium-sized businesses to the Kazakhstan's GDP is just over 27%, and the share of innovative enterprises in this sector of the economy is just over 0.98%. Currently the share of SMEs in Japan's GDP is 95 percent, the United States – 80%, Western Europe – 60%. In order to be more economically stronger and independent of oil bondage for national economy is advised to increase SMEs proportion.

The primer goal of this publication to raise concerns and recommendations on boosting digital literacy within SMEs owners, particularly in agribusiness and government structures. It is undeniable that without interconnection or as they say government-private partnership such capital needed processes like digitalization of business processes for both public and private success would not be seen.

The further development of digitalization in agriculture is hindered not by the availability or weak development of Internet connections, as well as the lack of local systems for spreading knowledge and training specialists in the use of digital tools.

For various solutions in the process of the study appropriate qualitative research methods have been used: monographic, analysis and synthesis, logical and abstractive constructional, etc.

In this paper ongoing digitalization processes from government of Kazakhstan in general was presented, application of this process to one of the most important industry (agriculture) is shown, problems for further advancement of digitalization of economy is pointed and some developments were made.

The object of research is the processes and tools of digitalization of decision-making used by small and medium-sized agribusiness in Kazakhstan.

The findings of this study contribute to preparation and advancing of conceptual development of digitalization for business-government relationships, therefore increasing competitiveness of industry and economy intact.

Key words: digitalization, new technologies, digital solutions, small and medium business, IT solutions, IT platforms.

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Агробизнестегі сандық технологиялардың дамуы

Шағын және орта бизнестің Қазақстанның ЖІӨ-де үлесі 27% ғана асады, ал экономиканың осы секторындағы инновациялық кәсіпорындардың үлесі 0,98%-дан аспайды. Қазіргі уақытта Жапонияның ЖІӨ-дегі ШОБ үлесі 95%, АҚШ – 80%, Батыс Еуропа – 60%. Экономика жағынан мықты ұлттық экономика үшін мұнай долларынан тәуелсіз болу үшін ШОБ үлесін арттыру қажет.

Бұл жарияланымның негізгі мақсаты – шағын және орта бизнес субъектілері, әсіресе агробизнестегі және мемлекеттік органдар арасында цифрлық сауаттылықты жоғарылату бойынша ұсынымдар беру. Өзара әрекеттесусіз немесе дәлірек айтқанда, мемлекеттік-жеке меншік әріптестік, капиталды қажет ететін және технологиялық тұрғыдан көп инвестицияларсыз, мысалы, мемлекеттік және жеке табысқа бизнес-процестерді цифрландыру сияқты процестер жүзеге асырылмайтындығы даусыз.

Ауыл шаруашылығында цифрландыруды одан әрі дамытуға интернет қосылыстың қол жетімділігі не әлсіз дамуы, сондай-ақ жергілікті жерлерде сандық құралдарды меңгеруді оқыту бойынша білім мен мамандардың тарату жүйелерінің болмауы кедергі келтіреді.

Мақаланы дайындау барысында зерттеудің сапалы әдістері қолданылды – монографиялық, талдау және синтез, логикалық және дерексіз конструктивизм.

Бұл мақала тұтастай алғанда Қазақстан үкіметінің цифрландырудың қазіргі процестері туралы, бұл процестің маңызды салалардың біріне (ауылшаруашылығына) қолданылуын көрсетеді, экономиканы цифрландыруды одан әрі дамыту проблемаларын анықтайды және бірқатар ұсыныстар жасайды.

Зерттеу объектісі Қазақстанның және Кореяның шағын және орта агробизнесі пайдаланатын шешім қабылдауды цифрландыру процестері мен құралдары болып табылады.

Осы зерттеудің нәтижелері өнеркәсіп пен тұтастай экономиканың бәсекеге қабілеттілігін арттыратын бизнес пен мемлекет арасындағы қатынастарды цифрландырудың тұжырымдамалық дамуын дайындауға және ілгерілетуге ықпал етеді.

Түйін сөздер: цифрландыру, жаңа технологиялар, сандық шешімдер, шағын және орта бизнес, IT шешімдер, IT платформалар.

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Развитие цифровых технологий в агробизнесе

Доля малого и среднего бизнеса в ВВП Казахстана составляет чуть более 27%, а доля инновационных предприятий в этом секторе экономики составляет чуть более 0,98%. В настоящее время доля МСП в ВВП Японии составляет 95 %, США – 80%, Западной Европы – 60%. Чтобы быть более экономически сильным и независимым от нефтяных долларов для национальной экономики, необходимо увеличить долю МСБ.

Основная цель этой публикации – осветить состояние и проблемы и дать рекомендации по повышению цифровой грамотности среди владельцев МСБ в целом и, в частности, в агробизнесе и государственных структур. Неоспорим тот факт, что без взаимодействия или, точнее, государственно-частного партнерства, капиталоемкие и технологически емкие инвестиции, для таких процессов, как оцифровка бизнес-процессов как для государственного, так и частного успеха, не был бы реализован.

Дальнейшему развитию цифровизации в сельском хозяйстве препятствуют недоступность либо слабое развитие интернет-соединения, а также отсутствие на местах систем распространения знаний и специалистов по обучению владением цифровыми инструментами.

При подготовке статьи были использованы качественные методы исследований – монографический, анализ и синтез, логический и абстрактный конструктивизм.

В данной статье были представлены текущие процессы цифровизации Казахстана и Кореи, показано применение этого процесса к одной из наиболее важных отраслей (сельское хозяйство), указаны проблемы для дальнейшего продвижения цифровизации экономики и сделаны некоторые предложения.

Объектом исследования являются процессы и инструменты цифровизации для принятия решений, используемые малым и средним агробизнесом Казахстана и Кореи.

Результаты этого исследования способствуют подготовке и продвижению концептуальной разработки цифровизации взаимоотношений бизнеса и государства, что повышает конкурентоспособность промышленности и экономики в целом.

Ключевые слова: цифровизация, новые технологии, цифровые решения, малый и средний бизнес, ИТ-решения, ИТ-платформы.

Introduction

The primer goal of this publication to raise concerns and recommendations on boosting digital literacy within SMEs owners and government structures.

The Ministry of digital development, innovations and aerospace industry of Kazakhstan was created to engage in the formation and implementation

of the state policy in the field of digital development of the country, in the fields of innovation, communications, public services, electronic industry, as well as engaged in the development of e-government, coordination of the activities of the State Corporation “Government for Citizens”, information security, aerospace industry, geodesy and cartography.

There is a paramount need to create favorable conditions for the broad development of digital

solutions in the sector of small and medium-sized businesses due to uncontrollable outbreaks such as COVID-19.

It is undeniable that without interconnection or as they say government-private partnership such capital needed processes like digitalization of business processes for both public and private success would not be seen.

The contribution of small and medium-sized businesses to the Kazakhstan's GDP is just over 27%, and the share of innovative enterprises in this sector of the economy is just over 0.98%. Currently the share of SMEs in Japan's GDP is 95 percent, the United States – 80%, Western Europe – 60%. In order to be more economically stronger and independent of oil bondage for national economy is advised to increase SMEs proportion.

Former publication on digitalization of public services did not consider broad overview on progress of this process, particularly in agriculture. To connect public and business experience in building digital eco infrastructure in Kazakhstan this paper was designed.

Precision agriculture also has serious challenges that need to be addressed as soon as possible. Implementation of digit requires accelerated solutions to the issues of integration of new systems with existing business processes, their automation and transparency, and qualified personnel of the new generation. A very important aspect is the coverage of farmland areas with a stable mobile connection no lower than 3G. This task, which is extremely costly for Telecom operators, should be solved, most likely, in the format of public-private partnership (profit.kz, 2020)

Literature review

E-governance is more than just a government website on the Internet. The strategic objective of e-governance is to support and simplify governance for all parties; government, citizens and businesses. It is not difficult for people in developed countries to imagine a situation in which all interaction with government can be done through one counter 24 hours a day, 7 days a week, without waiting in lines. However, to achieve this same level of efficiency and flexibility for developing countries is going to be difficult. The experience in developed countries shows that this is possible if governments are willing to decentralize responsibilities and processes, and if they start to use electronic means (Basu, 2004).

One of the first research contributions to analyze the impact of digitalization, specifically the impact of social media and big data on a large number of

European SMEs. It was found that BMI (business model innovations) and strategy implementation practices in business models led to more innovations and increased performance (Bouwman et al., 2018).

E-government is an effective tool to reduce corruption by promoting good governance and strengthening reform-oriented actors. Specifically, e-government can reduce corrupt behaviors externally by enhancing relationships with citizens and internally by more effectively controlling and monitoring employees' behaviors. This study examines the impact of e-government on corruption using national level data. The impacts of other traditional factors – bureaucratic professionalism, bureaucratic quality, and law enforcement – proposed by the public administration literature are also examined. Statistical analysis reveals that e-government has a consistently positive impact on reducing corruption, as do the traditional anti-corruption factors (Dong Chul Shim & Tae Ho Eom, 2008).

In all national policies myths of technological inevitability, a new and better government, rational information planning, and empowerment of the intelligent citizen can be discerned. Although the mobilizing powers of these myths are acknowledged, we conclude that existing empirical studies have generated little support for the inescapable telos of these myths, which makes canvas cleaning effects of e-government initiatives less likely (Bekkers & Homburg, 2007).

In Kazakhstan, only one of the components of informational society was accentuated; it is the formation and development of e-government, which has been successfully implemented. However, the problem of informational society is broader than just the development of e-government and the telecommunications industry.

Available data substantiates that the initiative faces several challenges such as political support and relationship between political institutions, bureaucracy and citizens, digital divide, widespread corruption, lack of human resources, and inadequate infrastructural development, which needs to be amputated to improve public service delivery (Bhuiyan, 2009).

Digitalization, focusing on not individual ICTs but the application of these technologies to entire value chains, is a theme that cuts across all of our work. In youth entrepreneurship, we are fostering a new breed of young ICT 'agripreneurs'. In climate-smart agriculture multiple projects provide information that can help towards building resilience for smallholder farmers (Tsan et al., 2019).

Digitalization can maximize the impact of these strategic initiatives to significantly reduce the impact of meat production and simultaneously drive

economic benefits by applying best practices up to 25%, meat waste -10%, consumption shift away from beef -28%, precision feeding -13%, smart animal wealth and health care -2.5% (Deloitte, 2017).

In accordance with calculations, “Akmola Phoenix” JSC, “Naydorskoye” LLP, and “Troyana” LLP can increase their gross profits with the help of digital technologies from USD 31 up to USD 54 per one hectare of wheat. If these farms are guided by all recommendations, which were submitted for them by the experts in the sphere of digitalization, then they can increase the crop yields of wheat by 25- 35 % in perspective. At the same time, they can increase such parameters as income and profits (Aitkhozhin et al., 2019)

According to the observations of the Ministry of agriculture of the Republic of Kazakhstan, on pilot sites, point farming with the use of new technologies and equipment allowed to get 2.5 times more yield. At the same time, farmers’ costs have been reduced by more than 20% (Terrapoint, 2019)

Digital technologies can also help governments improve the efficiency and effectiveness of existing policies and programs, and to design better ones. For instance, freely available and high-quality satellite imagery dramatically reduces the cost of monitoring many agricultural activities. This could allow governments to move towards more targeted policies which pay (or penalise) farmers based on observed environmental outcomes. In addition to monitoring compliance with environmental policies, digital technologies enable automation of administrative processes for agriculture and the development of expanded government services, such as in relation to extension or advisory services (OECD, 2019).

Methodology

The basis of the article is a detailed literature review on the experience of the ongoing digital services for agriculture using Kazakhstan and Korea cases. Based on it, different data sources are used to demonstrate application of smart practices on agribusiness. Data were gathered from official and mass media platforms, research publications and textbooks. For various solutions in the process of the study appropriate qualitative and quantitative research methods have been used: monographic, analysis and synthesis, logical and abstractive constructional, etc.

Results and Discussion

In Kazakhstan, many innovations and reforms are taking place in the public sector, which still oc-

cupies a large share of the national economy. To develop and introduce innovations, a state program is first developed.

One such innovation is digitalization and the State Program “Digital Kazakhstan” developed for that. Digital Kazakhstan was developed for 2018-2022, provides an additional impetus for technological modernization of the country’s flagship industries and will create conditions for the large-scale and long-term growth of labor productivity.

The implementation of the Program involves 141 billion tenge from the republican budget, 169 billion tenge from the funds of the quasi-public sector. According to preliminary estimates, the direct effect of the digitalization of the economy by 2025 will create an added value of 1.7-2.2 trillion tenge, thus ensuring a return on investment of 4.8-6.4 times by 2025 to the total investment, taking into account private investment.

The program will be implemented in the following five areas:

1. “Digitalization of economic sectors” – the transformation of traditional sectors of the economy of the Republic of Kazakhstan using breakthrough technologies and opportunities that will increase labor productivity and lead to an increase in capitalization.
2. “Transition to the digital state” – the transformation of the state’s infrastructure to provide services to the public and business, anticipating their needs.
3. “Implementation of the Digital Silk Road” – the development of a high-speed and secure infrastructure for the transfer, storage, and processing of data.
4. “Development of human capital” – transformations encompassing the creation of a creative society and the transition to new realities – the knowledge economy.
5. “Creating an innovative ecosystem” – creating conditions for the development of technological entrepreneurship with sustainable links between business, the scientific field, and the state, as well as the introduction of innovations in production.

In 2006, for the first time in Kazakhstan, the e-gov.kz is introduced – the portal of “e-government”. The availability of public services in the online format was made possible by providing citizens with electronic digital signatures (EDS) on a free basis. The EDS allows you to receive the necessary public services and certificates without leaving home.

The Users of the e-gov portal today are more than 6 million people. Through its infrastructure, it is possible to implement 760 electronic services and services.

Public services

Electronic government. Further increase of transparency, accountability and efficiency of state bodies is connected with the development of the “Open Government” of Kazakhstan. It consists of five components:

- “Open data” is a site where publicly available data of state bodies are placed, as well as the results and plans of their work;

- “Open NAP” is a single platform for people’s discussion of the regulatory and legal acts being developed;

- “Open Dialogue” is a platform for establishing effective feedback between state bodies and society;

- “Evaluation of the effectiveness of government agencies” provides an opportunity for citizens to participate in a public discussion of the activities of state bodies;

- “Open budgets” contribute to public control over the use of budgetary funds.

Public procurements. Since 2010, government purchases are being launched through the portal goszakup.gov.kz in real-time. This ensures the transparency of the process and the effectiveness of using budgetary funds. The system allows you to enter into electronic contracts, conduct procurement procedures, determine the supplier, publish information about contracts concluded and the results of their execution.

Licensing. Since 2012, Kazakhstanis can receive all kinds of licenses and permits on the portal [E license.kz](http://Elicense.kz).

Taxpayer online office. On this link, <https://cabinet.salyk.kz/> taxpayers can submit tax payment forms and pay taxes using their EDS, search for tax debt, submit declarations on personal income taxes and real estate (normally for public officials), etc.

Judicial online office. A single window for access to electronic services of judicial bodies, office. sud.kz is intended for filing electronic applications, petitions, and complaints in civil and criminal cases. Also, users of e-gov can enter the “Trial Cabinet” without authorization.

E-Health. Since 2015, the population has increased access to open medical databases. On the e-gov portal, the services “Calling the doctor at home”, “Recording to the doctor” and “Attaching to the medical organization” are automated. And through the portal of the Bureau of Hospitalization, the patient receives information about free beds in any hospital in the country for the next three days. If the patient has already received a referral from the doctor with a code for hospitalization, he can view the current waiting lists for regional and republican clinics and track his order.

Today, the digital center “Digital Center” has registered biometric data of 1220 citizens, which allows them the opportunity to receive services without presenting identity documents. The center provides remote video services, residents of the capital can learn digital literacy skills there.

For development of innovative eco infrastructure within the Digital Kazakhstan Program the Astana hub was created.

The Astana Hub is an international technology park for IT startups. Here conditions are created for the free development of Kazakhstan and foreign technology companies.

The official opening of the MOST Business Incubator took place on September 25, 2015. It is the first private business incubator in the country that supports start-up entrepreneurs at all stages of business development – from developing an idea to its implementation.

It started to be easy to buy tickets on different events and shows, air and train travels with online sources. The main problems to use this service are internet availability and IT literacy. Usually young and middle aged population is top users of online purchase.

The Flip.kz and the Meloman.kz are book purchasing online service with pick up points and delivery options. Although they sell also dishes, souvenirs and other commodities to diversify assortment and attract different buyers.

Kundelik.kz is an electronic journal for keeping grades of schoolchildren. For university students, Platonus online web platform with internal logins is used across Kazakhstan.

Bilim Media Group is an innovative company building the e Learning market in Kazakhstan. They create and distribute e-content with on – demand technology and service to deliver content to the end- user instantly. Their clients range from home consumers, governmental institutions, media organizations, and key educational institutions.

EDTECH publishes training materials for preparation for UNT and CTA for schools, colleges and educational centers of Kazakhstan. EDTECH organizes tests for more than 100 000 graduates of high school in Kazakhstan.

Openu.kz is an educational platform offering free access to online courses for students in Russian and Kazakh.

As part of the project, the best textbooks of the world’s leading universities in history, philosophy, sociology, psychology, anthropology, cultural studies, religious studies, linguistics, innovation, media, economics, management, and business are translated into Kazakh.

I-teka is the one-stop platform for searching drugstores, medicines, clinics and doctors by local areas.

Portal about medicine (zdrav.kz) is a popular technological product of electronic medicine that provides the broadest access of the population to the most up-to-date information on physical activity, proper nutrition, what should be done in case of illness, on methods for their early detection and treatment, as well as on doctors and medical organizations of Kazakhstan and foreign countries.

A list of clinics (<https://polikliniki.kz/>) is the one-stop search engine for all clinics and their contacts around Kazakhstan. Notable to say that each clinic already has own website to provide information about their services and doctors.

A list of doctors (idoctor.kz) provides information about the contact details and names of doctors with feedback from patients.

“University Medical Center” Corporate Fund was founded under the decision of the board of trustees of the autonomous organization of education “Nazarbayev University” dated 20 September 2015.

The purpose of the system is to promote the healthcare of Kazakhstan through the integration of clinical, educational and research activities. This integration has enormous advantages; it will contribute to the provision of modern medical education and will act to raise the standards of healthcare, focused on the patient and his family, at UMC Centers. UMS website provides information about its services and doctors by the competitive market price.

Therefore, all mentioned web recourses were created to better medical literacy for citizens and provide one-stop online platform for their medical needs. The one mentioned problem with them, websites needed updates and everyday monitoring to keep the attraction of customers.

Social media in Kazakhstan has turned the communication “from the government to citizens” upside down. Today, any active citizen can become a source of news and content, and get wide coverage. Technologically savvy young people are interested in democracy, personal space, human rights, and other issues of civil society. In September, President Kassym-Zhomart Tokayev in his first message to the people of Kazakhstan announced the transition to the concept of a “hearing state” in terms of establishing an effective system of communication with the public and business.

What are the benefits of Digital Kazakhstan for business? Unambiguously, simplifying the design and procedures for registration, obtaining information data, public services, using a more developed innovative ecosystem, business, along with the pop-

ulation, improves its functioning. As we see from the Digital Kazakhstan program, the main emphasis is on the state and quasi-public sector – services and industries, such as egov – a single portal of public services, an electronic database, etc.

Digitalization is the use of digital technology to change the business model and provide new opportunities for profit and value creation; it is a process of transition to digital business.

According to the analysis of BCG (Boston Consulting Group), B2C sectors are historically leading in the implementation of digital technologies: for example, the media, in which fundamental changes have already taken place, as well as retail, telecommunications, insurance, and banking.

In Kazakhstan, digitalization has begun to be implemented in state-owned companies and private large organizations. One of these is the Kazpost Joint Stock Company – a Kazakhstan company, the operator of the Kazakhstan national postal network. Service post.kz is an online branch of Kazpost. Since the launch in 2016, more than 1 million customers have already used it. The site allows you to find a convenient location of the post office, change the delivery address of the parcel, calculate the cost of delivery, pay for any services and even make money transfers.

The Government of Kazakhstan understands the importance of automating business processes to improve the quality of tax administration.

This direction provides for the implementation of three projects under the Digital Kazakhstan program:

- The project “VAT administration using Blockchain technology”;
- The project “Traceability of goods”;
- The project “Increasing tax collection by integrating databases of various sources”.

Management organization. During the organization of management, the traditional business of the XXth century used a linear-functional organizational structure of management, where managers were appointed by the levels of management (higher-middle-lower-level) and employees were concentrated in functional departments that performed narrow specific functions.

Management practices are currently changing. Companies of innovative profile (IT, research development) or supporting innovative management methods are looking for quick and effective methods. Agile (English-agile) appeared as an approach to software development in the United States in the 90s of the last century. It turned out that cross-functional self-organizing teams working with small iterations on the overall result are much more effec-

tive than the traditional method of working with functional departments.

Agile is a small team, various specialists, small tasks, a real result. Only 1-2% of Kazakhstani companies use the Agile approach, although the potential is huge.

The most popular approaches were Scrum and Kanban.

The basis of Scrum is short sprints, usually 2-3 weeks. Before the start of the sprint, the team itself creates a list of tasks for iteration, then the sprint starts.

Kanban (kahn-bahn) is a Japanese word; in translation, this means “visible record” or “visible part”. The Kanban system requires production only when there is a demand for products.

To ensure the successful implementation of the Kanban system, certain factors should be considered, such as inventory management, the involvement of sellers and suppliers, quality improvement and quality control, as well as the commitment of employees and senior management.

In the Kazakhstani market in the banking and retail sectors, the introduction of Agile has begun. M. Zhunusov, Eurasia Digital Hub, Beeline, among the changes with the introduction, noted that the slow classical workflow has moved towards structured rituals, also, self-organized teams have reduced the participation of management in operational tasks. 25% fewer letters and 40% fewer meetings.

Organization of accounting. In general, digitalization leads to a single unified use in the accounting and analysis of digital information and communication technologies. At the moment, the intellectual information technology in accounting is the 1C: Enterprise program. The 1C: Enterprise program system includes a platform and application solutions developed on its basis for automating the activities of organizations and individuals.

Blockchain. Experts say that in the next five years, blockchain will change not only the global economy but also everyday life. In Kazakhstan, a draft law is being prepared to regulate blockchain technologies, the introduction of which will also greatly help society get rid of bureaucracy and corruption.

Today we all use a decentralized platform for transmitting information – the Internet. But when it comes to the transfer of values (money), we are forced to resort to the services of old-fashioned, centralized financial institutions such as banks. Even modern online payment methods usually require the user to integrate with a bank account or credit card. Blockchain technology offers an intriguing opportunity to eliminate these intermediaries.

It keeps track of transactions, identifies the parties and concludes contracts. Traditionally, financial institutions and banks were responsible for these operations.

Cash payments. For the digitalization program of the country’s economy, small shops threaten to become an impregnable fortress. For many years, the state has been making efforts to transfer their accounting and settlements to the legal field, but so far there have been no obvious successes in this matter.

Speaking about small businesses, first of all, we must keep in mind the huge army of shops near the house – there are about 500 thousand of them all over the country. Another 100 thousand are small participants in online trading. Thus, the total number of trade participants hiding their turnover is about 600 thousand tenge.

It is generally accepted that the reason that forces them to work with cash payments is simply a reluctance to pay taxes. However, no exact studies on this topic have been conducted in the country.

The Chamber of Entrepreneurs Atameken has recently launched the Council for the Development of Startups and the IT Ecosystem.

According to A. Datkaev, general director of Smart Production LLP, the market offers two convenient solutions.

The first is a mobile online cash register operating via a smartphone, with which you can register any payments for cash, the connection price is 16 thousand tenge. The second is a mobile terminal for cashless payments, also working through a smartphone. Its convenience is that any transactions can be carried out in any place where there is a telephone connection, the price is 12 thousand tenge. The use of applications implies technical support and SMS notification, for which the entrepreneur pays 1000 tenge per month.

Both programs do not require downloading special programs, they work through the installed browser after activating the purchased program code. During the year of the offer, a mobile cash register was bought 1000 times, a mobile terminal for cashless payments – 9000. Moreover, applications are 5 times cheaper than any other analogue.

An analog of this product is webkassa- an online cash register for accounting fiscal operations. It is controlled from a smartphone, brands the checks, transfers them via WhatsApp. The online cash desk is automatically integrated with the most popular accounting systems in Kazakhstan. The monthly subscription fee for using the product is 3 K KZT.

It should be noted that online cash registers will only work if business entities are connected to the Kazakhtelecom OFD (fiscal data operator), which

must pay 1,500 tenge for online data transfer to the tax service. / month at the cash register, but this payment is available for all cash registers without exception.

At the same time, other technical solutions appear in the Kazakhstan market, such as reKASSA, the only mobile free cash register in Kazakhstan offered by COMRUN LLP.

reKASSA is included in the state register of the Republic of Kazakhstan of controlling cash registers under No. 235 and has the functions of X and Z reports, returns, cancellation of a check, purchase mode, etc. The reKASSA application can be said through any smartphone. In November 2019 this application has been installed over 10 thousand times.

The world experience of countries with developed agrarian sectors indicates that the introduction of IT technologies in production can reduce unplanned costs by up to 20% or less using innovative software that consolidates data arrays from equipment, sensors, drones, satellite and other external applications for making optimal decisions.

New technologies make it possible to trace the entire path of product promotion from the field to the consumer, which guarantees its quality and meets the needs of the client.

The development of digital technologies is attracting new jobs or business related with the digitalization. In terms of environmental sustainability, the potential impact of technologies, such as IoT, is relevant in reducing water consumption or pesticides and fighting against climate change. Another relevant perspective are the social issues, agricultural exploitations are located in rural regions, and smart agriculture development can help to attract population (social sustainability). Therefore, the development of smart agriculture is essential for several reasons and public institutions are working on the diffusion of the benefits between different stakeholders (Pesce et al., 2019)

In Kazakhstan, the state program E-APK has been developed. According to it, labor productivity growth in the section "Agriculture, forestry and fisheries" in 2022 must achieve 45.1%. State budget expenditure was planned for 2018-2022 at 335 829 492 USD. It was not identified in the document the share of that spending only for agriculture though.

In the course of its implementation, the following problems in agriculture have been identified:

- Inadequate business learning coverage;
- There is no single point of obtaining complete information (technology, research, scientific achievements);
- There is no structured information about world experience and modern technologies;

- The complex, lengthy and corrupt land acquisition process;
- The long and non-transparent loan process;
- Opacity of subsidies;
- Weak labor market activity in the agricultural sector and insufficient staff;
- Insufficiency of information about seeds / fertilizers / livestock / technologies;
- Irrational use of seeds, fertilizers, plant protection products;
- Lack/misuse of equipment;
- Lack of data on agrochemical analysis, space monitoring, accurate weather data;
- Inadequate development of phytosanitary and veterinary medicine;
- Lack of information on methods for sorting and packaging agricultural products;
- Weak logistics, lack of equipment in the seasonal period;
- There are no free vaults/warehouses;
- The prolonged customer search process;
- Opaque veterinary activities.

In 2018, 12 farms and 3 poultry farms received digital status, and 12 livestock farms became smart farms. Thus, the total number of Kazakh agricultural enterprises where production is automated using computer systems has reached 49 (Ministry of agriculture of Kazakhstan, 2019).

To date, 24 million hectares of arable land have been digitized, almost 100% of the total sown area. Also, work has begun on digitizing pastures. Farm productivity is boosted by technologies such as:

- forecasting the optimal time for harvesting;
- "smart watering";
- the intelligent mineral fertilizer application system;
- pest and weed control system.

In the digitalization of agriculture in Kazakhstan, Akmola, Kostanai, and Karaganda regions are leaders. Naydorovskoe LLP is so far the best economy example of the Karaganda region. It is notable for its high results in introducing advanced technologies and in crop yields. It is worth noting that this is the first farm in the Karaganda region that began a three-year process of certification of part of its fields for organic farming. A land plot of 3000 hectares was allocated and a separate Neue Dorf organic farm LLP was created.

As the successfully introduced digital technologies, one can cite an example of their introduction in agriculture at the Rodina agricultural firm, a producer of domestic milk for the markets of Northern and Central Kazakhstan. To enter the factory, fingerprints are used, which are stored in a database.

The control of technological processes for the reception of milk, the work of a pasteurizer, separator, tankers to create kefir, sour cream, fermented baked milk, snowball is also carried out using a centralized computer network.

In 2014, Atameken Agro began research in the field of agriculture to automate and develop technical capabilities, and in 2015, it introduced a remote sensing system and satellite monitoring of crops.

Online sales of grain crops in 2018 exceeded 10 million tons, and over the entire implementation period amounted to 24 million tons per 1 trillion. tenge.

Subsidies for agriculture are already being provided online for 11 types, in the future to expand this range in Kazakhstan.

However, the issuance of soft loans, which is of particular importance for agribusiness as a means to increase the volume and lines of activity, is still outside the online system. Numerous trips from villages to districts, regional centers for obtaining loans, the length of the period for obtaining soft loans take time, farmers' financial resources. Therefore, we believe that this direction should take priority for the digitalization of agriculture.

From time to time, farmers face problems in working with new technologies. For the introduction of technologies to be successful and productive, agricultural workers attend free consultations. Farmers are trained in the use of new technologies based on precision farming landfills: Kaskelen Agropark, Grain Institute named after A.I. Barayev, Zarechny LLP and Kazakh National Agrarian University. And by 2020, farmers will have the opportunity to take online courses in entrepreneurship, farming, agronomy and livestock farming.

ICT support policy for the livestock sector in Korea. On the basis of the Special Act on Assistance to Farmers, Fishermen, ETC., following the Conclusion of Free Trade Agreements in 2009, the Korean government has carried out support measures for the stabilization of livelihood of farmers by improving the competitiveness of agriculture. For livestock farmers, these measures aim to launch, so called "the Intelligent Feeding and Management System" that incorporates optimized feeding and management. The system includes the application of smart animal husband to raise the productivity by 20%. The productivity increase is measured by production volumes and quality. Table 1 shows governmental subsidies and loans under the system.

Korean farmers and retail has been introducing smart technology not only in rural areas but in urban environment as well. The result is a highly productive "vertical" metrofarm that produces 30kg of

vegetables per day at a rate that is 40 times more efficient than traditional farming. In the adjacent cafe, as many as 1,000 customers a day now purchase salads, smoothies and edible flowers grown next door in a full seed-to-table operation (BBC, 2020).

Table 1 – State support for smart livestock in Korea, mln USD

	2017	2018	2019	2020
Subsidy	8	15	20	30
Loan	13	25	33	50
Total	21	40	53	80

Source: Ministry of Agriculture, Food and Rural Affairs, 2020

According to estimates by the McKinsey & Company analytical center, 1/3 of all food products in the world (up to \$ 940 billion per year) are lost or waste. It is digitalization that will reduce these losses.

According to studies by the FAO Food and Agriculture Organization (UN), annual grain losses amount to 30% of total production. The world average is 10%, and in the CIS countries (including Kazakhstan) – up to 25%.

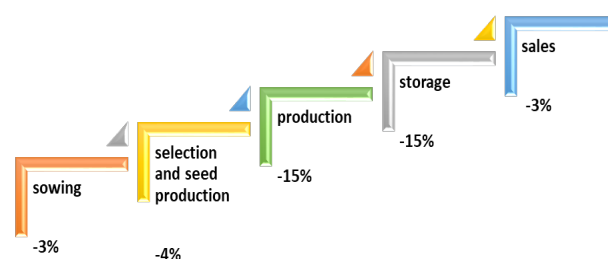


Figure 1 – Losses of grain on the supply chain
Source: terrapoint.kz

Thus, digitalization in Kazakhstan to solve business problems to increase the speed of processing procedures for state registration, other public services, accounting, cash transactions, etc. has begun. 310 billion tenge are allocated from the budget throughout the entire implementation period.

Private companies in the IT industry are also joining the digitalization process in response to market demand. This process requires the cooperation of all branches of knowledge, scientists, technical experts, development and research companies, and public-private partnerships, especially in vulnerable sectors of the economy – agriculture, secondary education, rural development.

To reduce administrative barriers, corruption, the efficiency of operations at the state and business levels, digital solutions are the way to our progressive development.

Conclusion

Digitalization is the use of digital technology to change the business model and provide new opportunities for profit and value creation; it is a process of transition to digital business.

State program called Digital Kazakhstan was developed for 2018–2022, provides an additional impetus for technological modernization of the country's flagship industries and creates conditions for the large-scale and long-term growth of labor productivity.

There are the benefits of Digital Kazakhstan for business. Unambiguously, simplifying the design and procedures for registration, obtaining information data, public services, using a more developed innovative ecosystem, business, along with the population, improves its functioning.

According to estimates, 1/3 of all food products in the world (up to \$ 940 billion per year) are lost or waste. Due to high density of population and settlements in Kazakhstan frequent business trip and offline communications become costly for entrepreneurs and consequently for customers who buy their end products. It is expected that digitalization that will reduce these losses.

Global emergencies, such as COVID-19 forced states to convert most of their services from offline to online. So did the business. By doing so many issues revealed to tackle with like internet access, communication score and scope, reliable and capable online platform, informational literacy level etc.

The digitalization process requires the cooperation of all branches of knowledge, scientists,

technical experts, development and research companies, and public-private partnerships, especially in vulnerable sectors of the economy – agriculture, secondary education, rural development. In order to make sustainable agriculture development Kazakhstani farmers, professional and public organizations and Ministry of agriculture must work together to apply digitalization decisions case it not just fashion and spending budget funding's but also it about increasing productivity on farm-side, better services for customers, safer environment.

For transparent monitoring of the state budget for digitalization target indicators connected with expenditure we recommend to make state authorities report on that matter available for public disclosure on digital platforms with creating mixed commission from members of professional unions in agriculture, parliament and farmers. In order to ease controlling of budget for digitalization of agribusiness we advise to divide it by target indicators, for instance precision agriculture technologies, health monitoring, feeding etc. with disclosure of that numbers in state agriculture development program for next 5-year-period.

We consider that every industry itself through regional branches should develop propaganda and educational resources to make sure that entrepreneurs aware and skillful to use online services. Remote economies should be provided with available physically and financially with internet of things. In order to comply with Digital Kazakhstan initiative, we believe that informational-communication market must be competitive and well presented, based on government-private partnership and antimonopoly. Government expenditures spent for that must be transparent and decisions made to some extent participative for stakeholders both business and customers.

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