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Non-standard employment modeling in the Republic of Kazakhstan

Abstract

Purpose: To determine the factors affecting non-standard employment in the Republic of Kazakhstan and their quantitative characteristics using the SmartPLS software.

Methods: Over the course of research we have been using the methods of sociological survey, structural equations modeling (SEM) based on SmartPLS, and partial least squares (PLS).

Results: We have hypothesized and tested the influence of such factors as education, social security, the human factor and digitalization on non-standard employment. We have assessed all test tasks and the suitability of the test entity. Using the Cronbach's Alpha coefficient, we have tested the internal consistency of the test questions and measured the effect of each question on the latent variable. Most of the indicators have high indicators, with the exception of the "Digitalization" factor. The low value of this factor is justified by the heterogeneity of the test responses. We have calculated average variance extraction (AVE) and reliability (Composite Reliability) coefficients of the model. We have checked the model variables for multicollinearity and calculated the determination coefficient.

Conclusions: Results of the analysis show that today the major issue is the lack or low accumulation of human capital among non-standard employees. The value of the R-square determination coefficient for the dependent variable "Non-Standard Employment" has a high value (0.75), which indicates that the factors included in the model describe well and have a high degree of influence on it. In general, the structural analysis has shown that the resulting model is adequate and built fairly well. Path Coefficients, reliability and validity coefficients are high enough to assess and analyze non-standard employment.

Keywords: non-standard employment, digitalization, human capital, education, social security, structural analysis.

Introduction

At the present stage of socio-economic development globalization processes in the world significantly affect the changes in the functioning of economy, including the level of employment. Demand for workers interested in flexible working conditions is growing. Development of non-standard employment caused by the transition to a post-industrial economy depends on a variety of internal and external factors affecting the transformation processes in this area. Identification and assessment of these factors are the subject of this study.

The authors perform a structural PLS analysis to build an empirical model of non-standard employment, using a modern software product SmartPLS. Based on the results obtained, we have tested the hypotheses. The information base for the study was obtained from the online social survey using the electronic platform SurveyMonkey. The novelty of the study is in the identification and assessment of a number of factors that can explain most of the differences in the impact on non-standard employment, contributing to the adoption of appropriate measures to improve the performance of various types of non-standard employees.

Review

World globalization contributes to the development of innovative processes, so that the employment sector is inevitably subject to transformational processes. As a result, new professions and forms of employment appear. In this regard, there is a growing interest in non-standard forms of employment and the study of factors contributing to their development (Buddelmeyer, McVicar, Wooden, 2015).

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Digital competencies and new skills are emerging in many professions. Demand is generated for experts proficient in online service technologies and competent in electronic and digital platforms working remotely. (Green, Livanos, 2015, Taubayev, Legostayeva, Serikova, Orynbassarova, 2019).

Social security is one of the issues for non-standard employees, as it puts them at a disadvantage compared to those who work in standard jobs. Non-standard employment workers may be at risk of not being eligible for social and other benefits in the event of losing their jobs. (Hipp, Bernhardt, Allmendinger, 2015, Avlijas, 2019).

Another important issue of non-standard employment is human capital. In the context of the economy digitalization, the demand for intellectual labor increases, which encourages workers to increase their human capital and gives them freedom to choose forms of non-standard employment. (Horemans, 2016, Shelomentseva, Bespalyy, Beisembayeva, Soltangazinov, 2019).

Post-industrial economy is characterized by the service sector expansion. The emergence of new jobs is accompanied by an increase in the requirements for the educational level of employees. (Pedulla, 2016, Wefersova, 2017).

Our research is based on the dual market theory, where the main object of attention is the secondary segment of the labor market, which is considered in the works of D. Gordon, A. Atkinson, and V. Pulkka. (Gordon, 1972; Atkinson, 1984; Pulkka, 2018).

Methods

Over the course of research we have been using methods of sociological survey, structural equations modeling (SEM) based on SmartPLS, and partial least squares (PLS).

Results

To build the model we shall use the concept of labor market segmentation as a theoretical basis, as well as the opinions of scientists concerning the issues of the secondary labor market. We shall determine the factors that have the greatest impact on non-standard employment. These include digitalization, education, human capital and social security.

Let us formulate the following hypotheses:

H1: digitalization has a strong impact on the spread of non-standard employment.

H2: There is a strong link between education and non-standard employment.

H3: There is a strong link between human capital and non-standard employment.

H4: There is a strong link between social protection and non-standard employment.

Based on the results of the questionnaire, a structural model was built in the SmartPLS program, demonstrating the digital expression of the relationships between the variables (Figure 1).

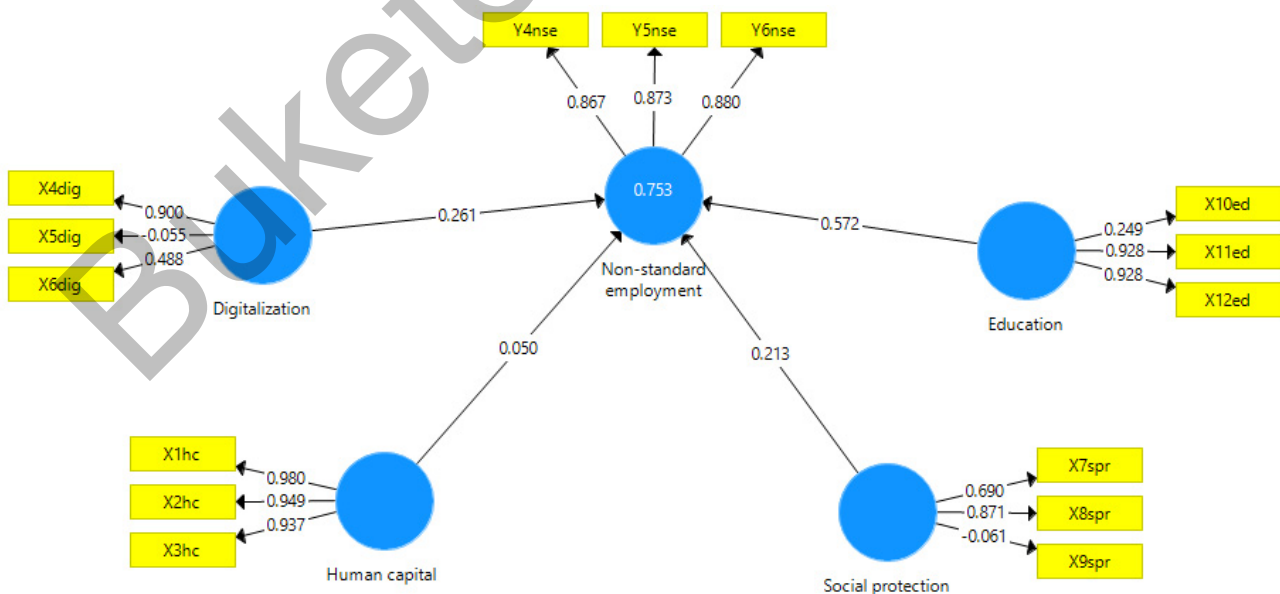


Figure 1. Structural model of non-standard employment

Note: compiled by the authors based on the analysis by the SmartPLS program

Almost all the obtained indicators of the model have rather high values. Let's check the results.

Testing the model.

This step assesses all test tasks and the suitability of the test entity. We check the internal consistency of the test questions in each block and measure the effect of each question on the latent variable. These calculations are performed by Cronbach's Alpha coefficient (Table 1).

Table 1. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Digitalization	-0.048	0.477	0.351
Education	0.712	0.785	0.595
Human capital	0.953	0.969	0.913
Non-standard employment	0.847	0.906	0.762
Social protection	0.721	0.772	0.532

Note: compiled by the authors based on data obtained using SmartPLS program

Cronbach's Alpha coefficient is an indicator of the uniformity (internal consistency) of the indicator assessment. A satisfactory value of the coefficient is equal or greater than 0.7. The data in Table 1 shows fairly high indicators. The exception is the factor Digitalization (-0.048). The low value is justified by the heterogeneity of test responses.

The average variance extraction factor (AVE) is the variance of indicator elements. The AVE value must be 0.5 or greater, but less than the cumulative reliability (CR). That is, the variance explained by design should be greater than the measurement error and cross-loads. Since AVE and corresponding confidence coefficients are based on factor loads, their values vary depending on the factor model. The AVE for a factor or hidden variable must also be higher than its square of correlation with any other factor or hidden variable.

CR is the Composite Reliability coefficient, which determines the overall reliability of the structure. The coefficient is calculated using the square of the sum of standardized factor loads and the sum of error variance. The value of CR is within the range between 0 and 1 where 1 is absolute reliability. Threshold values of CP are as follows: 0.6 is suitable for exploratory studies, 0.7 for confirmatory studies, 0.8 or higher is a good reliability for confirmatory studies. CR must exceed the AVE value.

Thus, the obtained results of the analysis of the model reliability and validity show satisfactory values. This indicates internal consistency of the questionnaire and rather strong indicator influence on the latent variable. Deviation from the standards shows only the factor of "digitalization", since respondent opinions were significantly divided. For this block of questions, the answers are characterized by heterogeneity and a large spread of values.

Collinearity check.

Collinearity describes a linear relationship between independent variables of the model. Closely related factors are deduced from the model, since they violate the condition of independence between the explanatory variables. The remaining factor is the one that, with a sufficiently close connection with the result, has the least close connection with other factors.

Table 2 shows the obtained collinearity statistics. To detect multicollinearity we use the VIF indicator. The maximum allowed value for this indicator is 5, while the minimum threshold is 0.2.

Table 2. Collinearity Statistics (VIF)

	Non-standard employment
Digitalization	1.371
Education	1.403
Human capital	1.086
Social protection	1.356

Note: Compiled by the authors based on data obtained using SmartPLS program

The data in Table 2 is in the acceptable range of values, which indicates that there is no multicollinearity between the variables.

The coefficient of determination.

The square of a multiple correlation is the proportion of the variance of the dependent variable explained by the model under study (independent variables). The R-square is within the range between 0 and 1. Relationship between endogenous and exogenous variables increases as the coefficient approaches one. In regression models, this is interpreted as the model's matching to the data.

R Square Adjusted is the adjusted coefficient of determination. It is used to compare models with different numbers of factors so that the number of factors does not affect the R-squared statistics.

The coefficient of determination obtained in the model for the variable "Non-Standard Employment" is 0.75, that is, about 80 % of the variance of this construction is explained by this model (Table 3).

Table 3. Quality Criteria (R Square)

	R Square	R Square Adjusted
Non-standard employment	0.753	0.745
<i>Note: compiled by the authors based on data obtained using SmartPLS program</i>		

Bootstrapping test.

Let us check the results of the PLS analysis. To do this we shall use the Bootstrapping command built into SmartPLS to test the statistical significance of the analysis results. The Bootstrapping procedure initiates the verification program and stages the final verdict from simple to complex events. Table 4 shows the values of the coefficients of the independent variables, T statistics, the P Values criterion, and the hypotheses validity (Table 4).

Table 4. Path Coefficients

№	Hypotheses	Original Sample (O)	T Statistics (O/STDEV)	P Values	Hypothesis status
H1	Digitalization -> Non-standard employment	0.261	4.500	0.000	Accepted
H2	Education -> Non-standard employment	0.572	10.410	0.000	Accepted
H3	Human capital -> Non-standard employment	0.050	0.970	0.332	Rejected
H4	Social protection -> Non-standard employment	0.213	4.361	0.000	Accepted
<i>Note: compiled by the authors based on data obtained using SmartPLS program</i>					

The software tests hypotheses using the T-Statistics indicator. An empirical value of T is compared with the Student's tabular T-test. Coefficient is significant when the empirical value of T exceeds the tabular value (1.96 for a significance level of 5 %). Significance of the coefficients is shown by the P Values criterion; its value should not exceed 0.05.

The results of the analysis (Table 4) show that three hypotheses have been accepted (H2, H3, H4) and hypothesis H1 has been rejected. That is, today, the major issue is the lack or low accumulation of human capital among non-standard employees. The majority of respondents said they had "never taken a refresher course" or "once in their entire career."

In the context of the digitalization of the economy the demand for intellectual labor increases. This encourages workers to increase their human capital and gives them freedom to choose forms of non-standard employment. Unfortunately, not all non-standard employees receive professional development. Employers most often save and invest in employees on a standard contract. Enterprises intensively implementing innovative technologies primarily dismiss unskilled workers. Individuals working on a temporary contract are also likely to have a harder time meeting the qualifying conditions than the usual standard ones.

As the research results have shown, "Education" has the greatest impact on factors on non-standard employment in consideration (Figure 2).

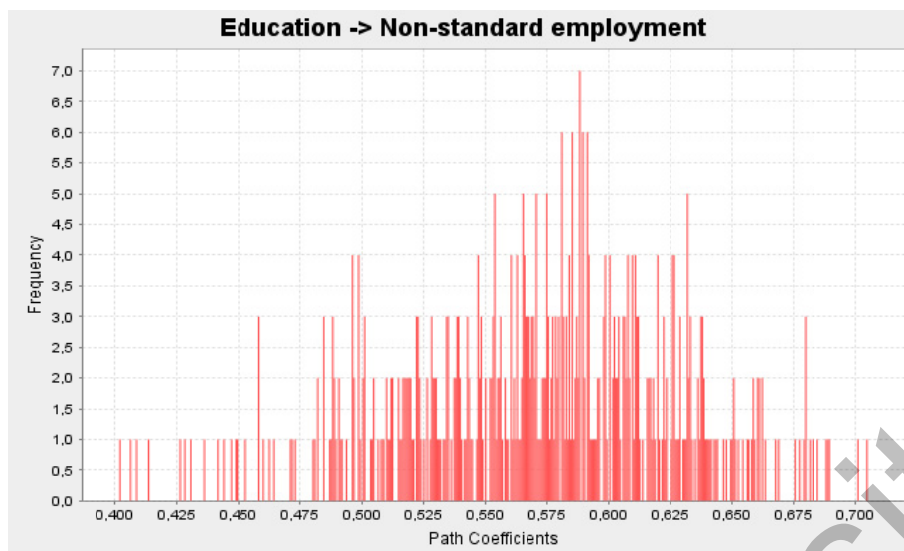


Figure 2. The value of the path coefficient of the independent variable “Education”

Note: compiled by the authors based on the analysis by the SmartPLS program

The high value of the education coefficient (0.572) confirms its significant impact on non-standard employment. In today's innovative society a good education is increasingly serving as an entry to the labor market. The employment rate for highly skilled men and women is significantly higher than that for less skilled men and women. Education is a strong indicator of people's professional positions in their activities. Employees with higher education voluntarily choose non-standard employment as a means of obtaining additional income. Thus, education can improve the chances of employment and perhaps even a qualitative improvement in work (i.e., higher wages, career growth, improved financial conditions).

The impact of digitalization on non-standard employment has a positive correlation (0.261) as well. A rapid development of the internet has created favorable conditions for remote work and the spread of the gig economy, where employer and employee communicate through online platforms. In light of recent developments related to the pandemic, there has been an increase in people working remotely. This is especially noticeable in education. Schools, universities, and colleges have switched to using modern online platforms. In the conditions of COVID-19 teachers had to master unusual for them work in a short time on such online platforms for network training as ZOOM, Microsoft Teams, GetCourse, etc. So, even without expecting such rapid changes, most of the population came face to face with information technologies and experienced the processes of digitalization. These days, this is nothing new for many of us.

A “social security” factor (0.213) plays at least an equally important role in the development of non-standard employment. Probably even a primary one, since it provides employees with guaranteed benefits, insurance deductions, pensions, paid labor leave and other benefits. Thus, reliable social security is an important factor in preserving the well-being of people.

The value of the R-square determination coefficient for the endogenous variable “Non-Standard Employment” has a high value (0.75), which indicates that the factors included in the model describe well and have a high degree of influence on it.

In general, the structural analysis has shown that the resulting model is adequate and built fairly well. Path Coefficients, reliability and validity coefficients are high enough to assess and analyze non-standard employment.

Discussion

The employment transformation under the influence of globalization processes is the subject of heated discussions in the scientific community. Of particular interest are the studies of development factors of these processes and the construction of a “new” employment model. Our approach to factor selection follows Bosch (2004) who believed that workers must be the first in line to be protected from economic and social risks.

In a sense, our results argue with the research of Ali (2020) whose model has shown the absence of a connection between digitalization and non-standard employment. However, given the diversity of the sample of models and the difference in the applied approaches and research methods, drawing unambiguous conclu-

sions still seems difficult. Additional evidence may be required before drawing conclusions about the extent of the impact of digitalization on non-standard employment.

We are impressed by the opinion expressed by B.A. Musayev (2017) that in flexible working conditions employees need to be provided with a sufficiently broad base of qualification skills to cope with the new requirements of the labor market. Professional development and realization of human capital should accompany employees throughout their career path, which unfortunately does not find application in modern realities. In this regard, in conditions of unstable labor companies primarily dismiss unskilled workers (Pritvorova, Simonov, Atabayeva, 2020).

We also support Oesch (2015) who claimed that the main issue of non-standard employment is its isolation from social guarantees. Those who work temporary and part-time jobs are more likely to have lower wages and shorter working hours than regular employees, which affects their eligibility for benefits, as well as the amount and duration of payments.

Different points of view on the “education” factor are found in the world literature. Some authors believe that in the modern economy the employment level for highly skilled workers is significantly higher than for less skilled workers, and education is the most significant parameter of people's professional positions in their activities. (Brown, Hesketh, Williams, 2004).

We disagree with Walsh (2007), who claimed that education does not have a strong impact on employment, including non-standard employment. Thus, the results of our study have shown a strong correlation between education level and non-standard employment. In general, literature does not widely cover relationship between education levels and non-standard employment.

Conclusion

Results of the study emphasize the importance of maintaining the level of professional qualifications. A rapid development of non-standard employment is accompanied by a number of issues, one of which is the low level of human capital accumulation. In the labor market, there is a demand for employees who not only have the ICT skills, but also are capable of independent activity, making creative decisions, regularly educating themselves and improving their professional qualities. Thus, the accumulation of human capital is one of the important factors for employment and should be a priority for the state employment policy.

In this context two things become apparent. First, Kazakhstan needs to apply adequate and flexible measures to improve the general welfare of the population. To do this the state must ensure a successful transition to a more flexible economic model based on the digital “Industry 4.0”. It is necessary to abandon the traditional relationship between employer and employee developed in the industrial era. In other words, provision of social benefits to non-standard employees should be considered not as an onerous cost to the employer, but as a contribution to improving labor productivity.

Secondly, the country's policy on flexible employment should also be focused on increasing the level of human capital, as it is one of the important aspects of increasing the growth of economic development and the overall well-being of the country. For example, supporting greater labor market flexibility in the Scandinavian context seems to be a sustainable political and economic strategy. These countries invest heavily in human capital, so there is a certain institutional complementarity.

Thus, it is necessary to apply constructive measures at the legal, economic, and state levels to create favorable working conditions for non-standard employees, taking into account the changes and growth of this type of work.

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А.К. Атабаева, Т.П. Притворова, С.Г. Симонов

Қазақстан Республикасындағы стандартты емес жұмысты модельдеу

Аңдатпа:

Мақсаты: SmartPLS бағдарламасын қолдана отырып, Қазақстан Республикасындағы қауіпті жұмысқа әсер ететін факторларды және олардың сандық сипаттамаларын анықтау.

Әдісі: Зерттеу барысында әлеуметтік зерттеу, SmartPLS негізіндегі құрылымдық теңдеулерді (SEM) және ішінара квадраттар әдісін (PLS) қолдана отырып модельдеу әдістері пайдаланылды.

Қорытынды: Білім, әлеуметтік қорғау, адам факторы және цифрландыру сияқты факторлардың қауіпті жұмыспен қамтылуға әсері туралы гипотезалар жасалды және тексерілді. Барлық тест тапсырмаларының бағасы және тестілер мәнінің сәйкестігі келтірілген. Альфа Кронбах коэффициенті арқылы тест сұрақтарының ішкі сәйкестігі тексеріліп, әр сұрақтың жасырын айнымалыға әсері өлшенді. Тек «цифрландыру» факторын есептегенде көрсеткіштердің көпшілігінде жоғары қарқын бар. Бұл фактордың төмен мәні тест жауаптарының әркелкілігімен негізделген. Үлгінің сенімділігі (AVE) және сенімділік (Композиттік сенімділігі) коэффициенттері есептелген. Үлгінің айнымалылары мультиколлинеарлыққа тексеріліп, анықтау коэффициенті саналған.

Тұжырымдама: Талдау нәтижелері бүгінгі күні ерекше мәселе стандартты емес жұмыспен қамту қызметкерлері арасында адами капиталдың болмауын немесе төмен жинақталуы болып табылатынын көрсетті. «Қатерлі жұмыспен қамту» тәуелді айнымалысы үшін R-квадрат бойынша анықтау коэффициентінің мәні жоғары мәнге ие (0,75), бұл модельге енгізілген факторлар жақсы сипаттайтындығын және оған жоғары дәрежеде әсер ететіндігін көрсетеді. Тұтастай алғанда, құрылымдық талдау нәтижесінде алынған модель барабар және жеткілікті жақсы құрылымға ие болды. Жол, сенімділік және жарамдылық коэффициенттері қауіпті жұмысты бағалау және талдау үшін жеткілікті жоғары.

Кілт сөздер: қауіпті жұмыспен қамту, цифрландыру, адами капитал, білім, әлеуметтік қорғау, құрылымдық талдау.

А.К. Атабаева, Т.П. Притворова, С.Г. Симонов

Моделирование нестандартной занятости в Республике Казахстан

Аннотация

Цель: Определить факторы, влияющие на нестандартную занятость в Республике Казахстан, и их количественные характеристики с помощью программы Smart PLS.

Методы: При проведении исследования были использованы методы социологического опроса, моделирования с помощью структурных уравнений (SEM) на основе Smart PLS и частичных наименьших квадратов (PLS).

Результаты: Выдвинуты и протестированы гипотезы о влиянии таких факторов, как образование, социальная защита, человеческий фактор и цифровизация на нестандартную занятость. Дана оценка всем тестовым заданиям и пригодности сущности тестов. С помощью коэффициента Alpha Cronbach's выполнена проверка внутренней согласованности тестовых вопросов и измерено влияние каждого вопроса на латентную переменную. Многие индикаторы имеют высокие показатели, исключение составил только фактор "Цифровизация". Низкое значение данного фактора обосновано разнородностью тестовых ответов. Рассчитаны коэффициенты достоверности (AVE) и надежности (Composite Reliability) модели. Выполнена проверка переменных модели на мультиколлинеарность, и рассчитан коэффициент детерминации.

Выводы: Результаты анализа показывают, что острой проблемой на сегодняшний день является отсутствие или низкое накопление человеческого капитала среди работников нестандартной занятости. Значение коэффициента детерминации R-квадрат для зависимой переменной "Нестандартная занятость" имеет высокое значение (0,75), что свидетельствует о том, что включенные в модель факторы хорошо описывают и имеют высокую степень влияния на нее. В целом, результаты структурного анализа показали, что полученная модель адекватна и имеет достаточно хорошую структуру. Path Coefficients, коэффициенты надежности и валидности обладают достаточно высокими показателями для оценки и анализа нестандартной занятости.

Ключевые слова: нестандартная занятость, цифровизация, человеческий капитал, образование, социальная защита, структурный анализ.

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