ECONOMETRIC MODELING OF PUBLIC UTILITIES

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The development of the living conditions of the population is considered so incompletely connection, that different values of the results of the factor which influence it in the different time and space, correspond to each value of the factors. Hence, the total number of influencing factors will be unknown. It is expedient to study such a dependence through correlation connections.

Our task consists of evaluating the existence of strong and weak connections which influence the development of public service sectors. We use the correlation analysis method in order to perform this task. Because our goal is considered to evaluate the importance and reliability of the interdependencies which influence the development of each sector which serves the population. We measure the criterion of dependence which influences the living conditions of the population through correlation analysis, but we cannot determine the cause of the relationships.

We selected information which belong to the reporting years 2004 - 2018, these information identified the areas of service and the factors which influence them, on the basis of certain signs (Table 1).

In this case, the factors which influence the development of each service sector are separately divided in the modeling. Therefore, we took the development of some service sectors as a factor which influences to other service sectors. The impact of influencing factors affects service sectors in different degrees. Selected factors may be involved in modeling once or more. Because we consider one factor as the main factor which influences each service sector, and we can consider another factor as the main factor which influences only one service sector.

Table 1.

utility service **for the population of Kashkadarya region and the factors which influence them**

YjO_x – providing accommodation and food services to the population of the region (in billion soums)	Y_5
Km_x – providing real estate services to the population of the region (in billion soums)	Y_6
I_x – providing rental services to the population of the region (in billion soums)	Y_9
Yt_x – providing individual services to the population of the region (in billion soums)	Y_{10}
MK_x – providing household goods and computer repair services to the population of the region (in billion soums)	Y_{11}
TsM_x – providing technical testing and architectural services to the population of the region (in billion soums)	Y_{12}
A_s – total number of the population of region (thousand people)	X_1
I_{ba} – employed part of the population of the region (thousand people)	X_2
A_d – total income of the population of region (in billion soums)	X_3
U_i – total consumption of the population of the region (in billion soums)	X_4
SH_i – personal consumption of the population of the region (in billion soums)	X_5
I_i –social consumption of the population of the region (in billion soums)	X_6
K_m – capital investments of the population of the region (in billion soums)	X_7
TFO_{bx} – total expenditures related to improving the welfare of the population of the region (in billion soums)	X_{12}
Uyk_{xx} – housing expenditures for the population of the region (in billion soums)	X_{13}

For example, if the total income of the population of the region becomes factor which influences all service sectors, the expenditures for the regional utility service will be considered the factor which only influences the development of the utility service sector for the population of this region.

We created the following functional view on the basis of the service sectors in Table 1 and the factors which influence them (Table 2).

Table 2.

A functional view of the empirical models which are structured for utility service **of the service sector for the population of the region**

YjO_x – providing accommodation and food services to the population of the region	$YjO_x = \varphi_5(A_s, A_d, K_m, TFO_{bx}) + \varepsilon_5$
Km_x – providing real estate services to the population of the region	$Km_x = \varphi_6(A_d, K_m, Uyk_{xx}, M_x) + \varepsilon_6$
I_x – providing rental services to the population of the region	$I_x = \varphi_9(A_s, Km_x, K_m) + \varepsilon_9$
Yt_x – providing individual services to the population of the region	$Yt_x = \varphi_{10}(A_s, SH_i, K_m, I_i) + \varepsilon_{10}$
MK_x –providing household goods and computer repair services to the population of the region	$MK_x = \varphi_{11}(A_d, SS_x, T_{o'x}) + \varepsilon_{11}$
TsM_x – providing technical testing and architectural services to the population of the region	$TsM_x = \varphi_{12}(I_{ba}, A_d, TFO_{bx}) + \varepsilon_{12}$

We used statistical data from 2004 to 2020 to create multi-factoral empirical models through the service sectors for the population of Kashkadarya region and the factors which influence them.