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IMPACT OF DIGITAL (SMART) ECONOMY ON OTHER SMART COMPONENTS: PILOT RESEARCH

Yelena Popova
Doctor of Economics, Associate Professor,
Transport and Management Department
Transport and Telecommunication Institute
Riga, Latvia

Introduction

The word "Smart" has become iconic and symbolic in the contemporary life. Smart people use smartphones and smart kitchens in the smart homes, they live in smart society and care about smart environment, and so on.

The goal of this research is to consider the impact of Smart Economy on other "smart" domains. To achieve the goal, there were set the hypotheses and then they were tested. The testing of the hypotheses was done in Smart PLS-SEM software.

1. Literature review

The "smart" idea refers to employment of digital technologies for the improvement in life of people and businesses [1-3]. The routine operations with the state-of-the-art technologies become more efficient [4]; the new approach to ecology has appeared [5]; we can speak about new economic relations [6; 7].

There are many researches, which consider the smart areas; there are numerous researches devoted to sustainability and, due to the nature of sustainability, they usually study the combinations of two or three aspects of activities. However, the author has not found any researches revealing the relations between various smart fields. Therefore, the concept of the study seems to be relevant and topical.

All the smart areas are interconnected; nevertheless, the author supposes that the level of economic development is very important for determining all aspects of our life. That is why the study considers the impact of Smart Economy on all other smart areas. It predetermined the main concept of the research and the hypotheses which were set and tested by the author.

2. Methods

2.1. Model

It was decided to test the hypotheses using the partial least squares (PLS) regression; it very often used for structural equation modeling. According to

Ringle et al., 2015 [8], this method presupposes the evaluation of validity and reliability of the components as the first step of the research, and the second step is estimation of the structural.

The first step – estimation of the reliability and validity – was provided by using the Composite Reliability (CR) and Average Variance Extracted (AVE). The model constructs were checked for multicollinearity using the Variation Inflation Factor (VIF). There was also assessed the discriminant validity, for which cross-loadings and the Heterotrait-Monotrait Method (HTMT) were used. All the estimations corresponded to the reliable and valid model [8-14].

The second step comprised the hypotheses testing investigated via path coefficients of bootstrapping algorithm. For estimating the quality of constructed model were used path coefficients, coefficients of determination R^2 adjusted, T-Statistics and *p*-values.

2.2. Indicators Used in the Model

In general, there are usually distinguished 6 principal domains of "smartness": Smart Economy, Smart Environment, Smart Society, Smart People, Smart Mobility, Smart Living.

The indicators, employed for determining the smart areas, are traditionally used in the researches for determining the smart components [15]:

Smart Economy: e-commerce, % of ICT employment, usage of the internet for everyday operations, availability of energy from renewable sources, etc.

Smart Environment: resource productivity, expenditures on nature protection, hazardous wastes, emissions, pollutants, etc.

Smart People: HDI, adults learning, % of students, expenditures on education, internet usage, etc.

Smart Society: indicators of risk of poverty, employment, female equality, youth equality, healthcare system, access to internet, etc.

Smart Living: working hours per week, household expenditures, % of urban population, crime level, etc.

Smart Mobility: individual transport means, transport emissions, renewable energy in fuel, transportation volumes, safety on roads, etc.

2.3. Setting the Hypotheses

There were set 5 hypotheses:

H_1 – Smart economy has impact on Smart People.

H_2 – Smart economy has impact on Smart Society.

H_3 – Smart economy has impact on Smart Environment.

H_4 – Smart economy has impact on Smart Living.

H_5 – Smart economy has impact on Smart Mobility.

The conceptual model of the research is shown in Figure 1.

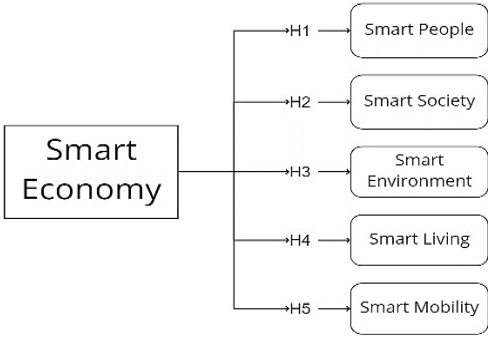

Figure 1. Conceptual model of the research

3. Results

The obtained results are presented in Figure 2.

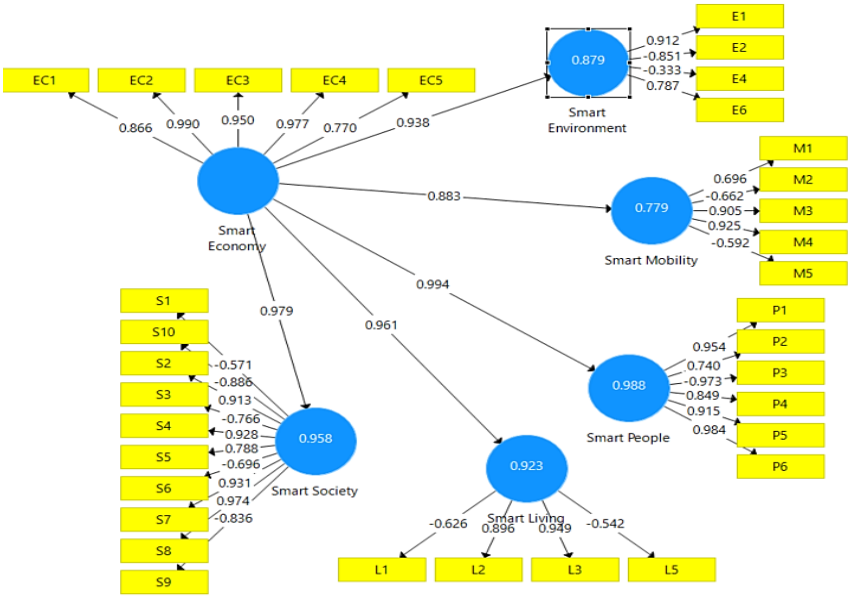

Figure 2. Resulting model

Source: generated by the author in Smart PLS-SEM 3.00 software on the basis of statistical data from [16–19].

The yellow boxes represent the separate indicators, and the loading of each indicator is shown on the corresponding arrow. All the indicators' loadings demonstrate good quality. Due to the evaluating the Composite Reliability (CR) and Average Variance Extracted (AVE), some indicators were excluded from the model (Ec6, E4, L4). The values in the blue circles show R^2; all the latent variables have very high percentage of model explanation. The values on the arrows between the variables show the path coefficient, and determine the degree of impact of Smart Economy on other smart areas. As we can see, all the values are very good, and it seems that all the set hypotheses are supported by the model. Nevertheless, hypothesis H3 is not taken as supported, since t-statistics (0.89) and *p*-value (0.74) do not allow us confirm the hypothesis.

Conclusions

The goal of the study was to consider the impact of Smart Economy on other Smart areas. It was dome with employment of the partial least squares (PLS) regression on Smart PLS-SEM 3.00 software.

As a result, four hypotheses of five initially set ones were supported. It means, Smart Economy has impact on Smart People, Smart Society, Smart Living and Smart Mobility.

It means, affecting the Smart Economy indicators, we can influence other "smart" domains.

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