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FROM THE EDITOR

Dear Reader,

This is the issue for 2019 and we expect to be able to publish the next issue in December 2020.

Most of the authors are PhD students and we encourage articles from both established academics, as well as prospective academics.

For past and future authors the good news is that we have been added to the EBSCO database system. The journal can be found in the EBSCO Business Source Complete database.

We hope you enjoy this issue and are looking forward to the next issue.

Best wishes

Viesturs Pauls Karnups

General Editor

DETERMINANTS OF ECONOMIC GROWTH IN THE EU NUTS2 REGIONS

ALEKSEJS SREBNIJS
MAKSIMS SIČS
OĻEGS KRASNOPJOROVŠ

Abstract

The authors employ a Bayesian Model Averaging (BMA) framework to study economic growth determinants of the 276 European regions during 2006–2015 period. This framework allows one to address, as much as possible to date, the model uncertainty problem. Application of BMA provides a possibility to run simultaneously numerous models to test each determinant in all possible variations. By controlling for top 500 higher education institutions over the world, the authors find statistical evidence that not only quantity of educational institutions does matter, but also the quality of each. In fact, it is one of the significant determinants of economic growth. Also, the model proves that higher education level, higher share of ICT patents, higher prime age population share, as well as higher manufacturing share are positively associated with subsequent economic growth; whereas, capital city regions tend to develop faster. The regions that tend to have a higher share of people with primary-only education have forecasted slower growth, as well as CO₂ emissions and rapid population growth tend to have a negative correlation with economic growth. The findings suggest that a high share of information and communication technologies patents and a high share of industry in gross value added (GVA) will positively affect economic development. The authors also found a positive spillover effect from the neighbouring regions. Finally, the findings confirm a conditional convergence process among European regions – regions with higher initial income tend to develop slower if other factors remain unchanged.

Keywords: Economic growth, Bayesian Model Averaging (BMA), conditional convergence, European NUTS 2 regions

JEL code: C11, O47, R11

INTRODUCTION

Starting from the middle of the 20th century, econometricians were using Standard Ordinary Least Squares to investigate which factors influence the economic growth. Extensive research was performed to explore new determinants, allowing regulators to correctly identify directions of reforms needed to be implemented to boost economic growth. Solow (1956) and Swan (1956) are pioneers who studied economic growth and conditional convergence,

also known as catch-up effect theory¹. This gave birth to a new stream of research called “Growth Econometrics”. Solow and Swan invented neoclassical growth model showing that GDP per capita tends to converge over time. Subsequent authors identified that the study can be improved by determining what influences the productivity of labour and capital accumulation. Thus, such research papers as Barro (1991), Levine and Renelt (1992), Magrini (1998), Henderson and Russel (2004) added education attainment, the degree of macroeconomic stability, human capital, research activities, literacy rate, fertility rate, mortality rate, spillovers of technological knowledge and many other determinants to explain productivity of previously discussed factors.

Despite being exhaustively studied on a cross-country level, the economic growth in regions has been remaining an open question for several decades, because of data-sensitive results. Researchers found it essential to analyse regional growth since regulators generally implement structural reforms that affect regions and consequently by their means influence macroeconomic condition of the countries. Regional level studies allowed to identify more potential GDP per capita growth determinants, thus, allowed making better strategic decisions for regulators. Authors of regional studies analysed regional economic growth of a wide variety of countries: analysis of American regions by Deller S. C., Lledo V., Marcouiller D. W. (2008), study by Ding S., Knight J. (2008) of Chinese provinces, paper of Gonzalez & Montolio (2004), who investigated growth determinants of Spanish regions, and study of European NUTS2 regions by Cuaresma J. C., Doppelhofer G. & Feldkircher M. (2014). The authors build on a research study on European NUTS2 regions since conditional convergence in each geographical area has its specifics. The difference might occur due to region-specific economic, political or other factors. Due to the free-trade agreement, countries in European Union can trade without any barriers. Additionally, citizens of European countries can travel across the region without barriers. This might enhance the labour mobility across the countries and, consequently, might speed up the conditional convergence. A key difference between Europe and other world regions is a quite rapid change in the list of member countries. This can have an ambiguous effect on the conditional convergence. On the one hand, the geographic expansion of the EU might have a positive effect on conditional convergence due to additional funds received from the EU. On the other hand, additional costs to meet the requirements of European Union for joining the union and inefficient policies of EU might destroy the economic value. The effect is unclear and economic theory has poor evidence that would explain this. Moreover, the previous studies (for example, Cuaresma et al., 2009; Cuaresma et al., 2014) use pre-crisis data to find economic growth determinants. Importantly, pre-crisis economy was peaking, which might bias the impact of macroeconomic indicators on economic growth. For example, Latvian GDP per capita in 2008 was 11 110 EUR, however, in 2009,

¹ The theory states that regions with lower level of per capita income, controlling all the other factors, tend to grow at faster rates than richer regions.

it was already 8 704 EUR; total investments as % of GDP have declined by 37.35% in 2009; etc. (International Monetary Fund, 2010).

Finally, the novelty of the article lies behind the explanation of the GDP growth per capita by the quality of education in a region. The authors measure the quality of education in a region by adding a variable that represents the number of universities in a region conditional upon inclusion in top 500 Shanghai Jiao Tong University Ranking in 2005. The authors believe that the better the quality of education that was recognised internationally the larger should be the GDP growth per capita of a region.

Up until now, numerous factors that explain economic growth have been identified, and researchers constantly continue to look for new determinants that are related to economic growth. However, more determinants also caused limitations for researchers and increased the uncertainty of the model. Linear regressions are sensitive to overfitting. When the model includes too many parameters, compared to the number of observations, the output of regression erodes because it starts to incorporate random error, i.e. noise; rather than just investigating the causal effect between the variables. Another problem that arises is the lack of methods through which computers would be able to aggregate the whole set of variables and provide reliable estimates of the marginal effects. One of the ways to mitigate the uncertainty of the model is to aggregate all the possible outcomes and average their probabilities of being included into the regression, thus, Bayesian Model Averaging (BMA) method was created. Using BMA, it is possible to address not only a single model, but millions of models which could potentially be constructed in order to estimate the effect of a particular bundle of factors on economic growth. BMA allows combining the output of millions of linear regressions. BMA allowed to account for more factors, mitigate the model uncertainty problem, and find previously unobserved factors (Raftery, 1995).

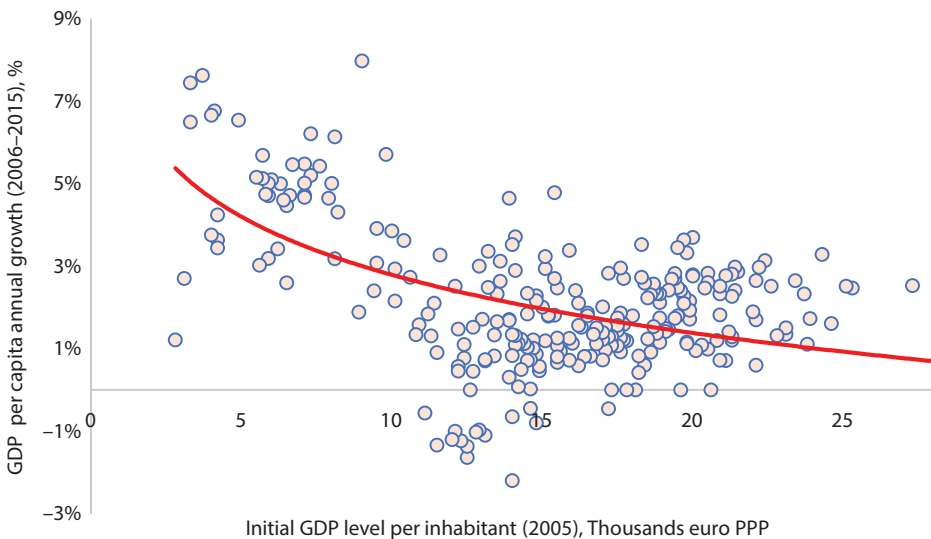
The process of determining the appropriate factors of economic growth is still an open question. Since regions individual growth rates contribute to the overall growth of the economy in a country, there is a need for regulators to understand what policies and structural reforms should be implemented to boost the regional growth. Researchers continue to find alternative determinants of GDP growth using various techniques, statistical models, and unique datasets. Consequently, despite a huge pool of factors being already discovered, there are many more that still are unknown. Therefore, the authors formulate the following research question: **What are the determinants of economic growth of European Union NUTS2 regions?**

The article is structured in the following way: section II reviews the existing literature regarding the economic growth and analyses the advantages of a wide variety of methodologies applied in growth econometrics. Section III describes the BMA methodology employed in this article. Section IV describes the data, and Section V provides empirical results. Section VI discusses the determinants of economic growth. Section VII finalises with the concluding remarks and the potential improvements of the research.

LITERATURE REVIEW

The economic growth has been one of the most researched topics since the middle of the 20th century. Countries strive to boost the economic development; however, after every year with a positive economic growth, it becomes harder to achieve high growth rates. Larger economies are challenged to achieve high growth rates per capita by their increasing income level per capita. The graph below explicitly depicts the absolute convergence, the effect when regions with higher GDP per inhabitant have lower economic growth (Figure 1).

In this case, the absolute convergence can be reflected on the regional level as well. The regions with GDP level per inhabitant higher than 10'000 EUR PPP per capita experience an average growth of 1.57%; however, regions with lower income (< 10'000 EUR PPP) experience the average growth of 4.67%. In turn, the idea of conditional convergence is that poor countries tend to grow faster than rich countries if they have similar equilibrium income level. In other words, Germany would require much larger effort to achieve growth of 4% than Latvia, because it already has a higher income level per capita.



Source: Graph created by the authors using Eurostat

Fig. 1. **Absolute Convergence in EU NUTS2 regions during 2006–2015**

Consequently, the instruments of economic growth have been actively researched using various econometric models and statistical techniques starting from simple OLS up to Bayesian Econometrics. The models were tested on cross-country and cross-region levels. The authors will discuss the studies of economic growth using various methods and different levels of aggregation in detail.

MAIN APPROACHES TO STUDY THE DETERMINANTS OF ECONOMIC GROWTH

The neoclassical growth model, introduced by Solow (1956) and Swan (1956), shows that GDP per capita converges over time. The original theory postulates that there is a negative relationship between the income level and income growth. Notably, this does not imply absolute convergence yet, because countries may strive for their individual steady-state growth rates.

One of the most important contributions using variables outside the original theory to explain economic growth was done by Barro (1991). He tried to explain growth by adding 16 different variables to original theory to describe the productivity growth. However, the main problems he faced using standard OLS model was the heterogeneity problem and simultaneous causality. The direction of causality between economic growth and some possible growth determinants (institutions and macroeconomic factors, for instance) is not clear. Since the findings are subject to bias, they must be analysed cautiously. As an alternative, Sirimaneetham & Temple (2009) compare results of OLS and 2SLS models. Although 2SLS has an undebatable advantage over simple OLS in mitigating causality issues, it is weakly robust in practice. The reason is that it is challenging to find proper instrumental variables that would describe a determinant and at the same time have a 0 correlation with the dependent variable, GDP growth. 2SLS approach has not found enough support due to its limited applicability.

Another way to determine productivity growth is to apply nonparametric production frontier approach (Henderson and Russel, 2004). Traditional parametric tests always assume a normal distribution of the data. However, the normal distribution is often overused in academia and even GDP growth with a large data set might be skewed to one of the sides. In this case, nonparametric tests allow the researchers to relax the assumption of normal distribution of the data and get closer to the real data distribution. Importantly, if any of the parametric tests are valid then non-parametric tests will provide spurious results. The drawback of the model is that it gives too much weight on data distribution which might be quite arguable.

However, employing different factors of economic growth in the model raise another econometric problem – model uncertainty. In a simple Ordinary Least Squares estimation, by adding an additional variable to the model there is some probability of receiving a significant determinant just by chance. Statistically, one might expect 1 out of 10 determinants to be significant at 10% significance level. This raises the ambiguity of any results. One of the examples is excluding fundamental Solow-predicted variables such as technological change has led to controversial results that growth is boosted by indefinite investments in human capital so that countries with higher initial income might have higher economic growth (Romer, 1986; Lucas, 1988). The absence of conditional convergence must be cautiously considered. There are three problems that might appear when empirically modelling conditional convergence process. (1) Due to model

specifics, the absence of initial income in a model can lead to uncertain results since initial income has proven to have a strong correlation with GDP per capita growth (Temple, 1999). (2) There is a certain initial income threshold below which conditional convergence may not take place (Azariadis & Drazen, 1990). (3) There are certain issues with endogeneity. Hence, the authors included initial income in the regression, and, luckily, are not exposed to the second issue since none of the European regions live under the growth threshold. To deal with the third issue the authors used lagged values of given variables. The authors included independent variables as close as possible to the beginning of the period under consideration.

There are several methods to mitigate model uncertainty – extreme bound analysis, BACE, and BMA. Under extreme bound analysis, if the factors change the sign over different models they are not regarded as robust determinants; however, if the factors retain the sign in different model sets, the determinant is considered robust (Levine & Renelt, 1992). Contrary, Hoover and Perez (2004) argue that extreme bound analysis makes some of the important variables appear to be weak determinants, but some independent variables spuriously appear to be significant.

The most recent development in models of economic growth includes Bayesian approaches to estimate the posterior probabilities. The beauty of Bayesian econometrics is model uncertainty mitigation. Since previous models are compatible, the Bayesian approach allows to put all the models in one place and estimate the average coefficient out of all models. Sala-i-Martin (1997) suggests estimating the robustness of findings by applying Bayesian Averaging Classical Estimates (BACE). He proposes giving a weight to each model that sum of all the weights is equal to 1. The weights should represent the likelihood of each model. Nevertheless, the equal weighting is applied. This model allows testing many determinants at one time, but the choice of a prior² remains a subjective judgment. Also, BACE gives an equal weighting to each of the models whereas some models are superior to other based on historical prove or correlational analysis (Sala-i-Martin, Gernot and Miller, 2004)

The further research applies model averaging techniques, or Bayesian Model Averaging technique to correctly evaluate the robustness of findings. In contrast to BACE, BMA does not assign an equal weight to each model, but chooses the best model out of all. In fact, BMA does $2^K - 1$ regressions (K stands for a number of explanatory factors). For illustrative purposes, if one applies 30 different factors to explain GDP growth, BMA would run more than 1 billion models. In such a large pool of models, each theory is tested and provides an aggregate outcome (Sala-i-Martin, 1997; Eris & Ulasan, 2013; Danquah, Moral-Benito, Ouattara, 2014; Zeugner & Feldkircher, 2015).

Eicher et al. (2007) adjust BMA to Iterative Bayesian Model Averaging (IBMA) “because the simultaneous consideration of model uncertainty and

² Prior – initial model’s prediction about probability distribution of the variables.

parameter heterogeneity in standard growth regressions increases the number of candidate regressors beyond the processing capacity of BMA” (Eicher et al., 2007). The adjustments allow making a conclusion that a long list of regressors that most of the authors applied in cross-country data does not explain economic growth determinants in OECD. This is to say that economic growth yet remains a puzzle even on the cross-country level as well as on the region-specific level.

EXPLORING ECONOMIC GROWTH DETERMINANTS ON A COUNTRY-SPECIFIC LEVEL

The findings of conditional convergence go down to Solow (1956) and Swan (1956) starting with neoclassical growth model described above. Solow and Swan (1956) define GDP as a function of investments (I), total factor productivity level (A) and labour endowment (L). Mankiw, Romer, and Weil (1992) argue that productivity parameter, A, should not only account for fixed productivity level and technology, but also for country-specific effects on growth. Many cross-country studies have tried to build up on the previous research by extending the variable set determining A. Although Solow and Swan assumed total factor productivity (TFP) being the same over the long run, this is hardly realisable since TFP is constantly growing and additional factors help to explain the growth (Temple, 1999). Hence, further research of economic factors determining the convergence is split between the two groups: Solow growth model and growth determinants outside original theory (Durlauf, 2005).

One of the most popular contributions using alternative variables to explain economic growth was done by Barro (1991). Barro tried to explain economic growth with such variables as primary schooling, GDP levels at different periods of time, literacy rate, fertility rate, mortality rate, secondary-school enrolment rate and many others. He states that poor countries will catch-up if they have high human capital per capita; growth per capita and investment rate negatively relate to government consumption, because government distorts the growth with high taxes; economic instability has an inverse relation to economic growth. Indeed, economic stability plays a significant role in economic growth. Although when enough economic stability is in place institutions do not contribute to economic growth (Sirimaneetham & Temple, 2009). Likewise, the authors reflect to a finding of Azariadis and Drazen (1990) that there should be a certain amount of initial income and degree of stability for conditional convergence.

Since the middle of the 20th century, the debate about determinants outside original Solow theory was widely discussable. For instance, several authors are claiming that by applying various determinants the effect of economic convergence can be confirmed only with initial income and investments (Levine, Renelt, 1992). Contrary, other researchers prove that there are plenty of other variables that can explain economic growth. As such political institutions (Acemoglu & Robinson, 2001), real exchange rate (Easterly and Levine, 1997)

or specifically capital accumulation should have had economic effect on the economic convergence. Indeed, capital accumulation takes a significant stake in the process of determining the labour productivity. It does include both physical and human capital which account for 90% increase in output, while an increase in TFP accounts for the remaining 10% (Henderson and Russel, 2004).

It is important to note that the finding may differ from region to region. For instance, when Eicher et al. (2007) analysing developed OECD counties does not find any effect of industry structure on economic growth, however, Masanjala and Papageorgiou (2008) analysing African region find mining sector significantly contributing to economic development. This might be one of the reasons the variables outside original theory may differ from region to region.

Another approach to economic growth is the analysis of a spatial effect (the neighbouring countries positively affect the GDP growth). For instance, fast developing countries may positively affect the neighbouring country. LeSage et al. (2008) take a new approach to the effect by applying Spatial Durbin Model (SDM), Spatial growth regression and compare the results to the BMA using region-specific data. They found that long-run steady-state regional income depends on own region, neighbouring region characteristics, the spatial connectivity structure of the regions and the strength of spatial dependence. Their finding was that the spatial spillover impact on neighbours is negative, while own regions positively affect the economic growth; consequently, the overall effect is ambiguous (LeSage et al. 2008).

Finally, M. Danquah (2013) combined non-parametric DEA approach with BMA approach to find the effect of geographic, institutional, macroeconomic variables, trade openness, factor supply variables, and institutional variables on the economic growth. Danquah et al. (2014) postulates that the key determinant of TFP growth is trade openness, initial GDP, and unobserved heterogeneity during the estimation period 1960–2000.

EXPLORING ECONOMIC GROWTH DETERMINANTS ON A REGIONAL LEVEL

The researchers apply like cross-country growth factors, but regional level allows the use of additional explanatory variables that are different across the regions within a country, and consequently, new discoveries and approaches to economic growth.

According to Lall & Yilmaz (2001), public capital and human capital do not contribute to the speed of convergence, because temporal economic behaviour and regional differences have much larger effect on economic convergence. In contrast, Gonzalez & Montolio (2004) support the idea that public investments would increase the economic growth; while Cuaresma et al. (2014) and Kaldewei, C., & Walz, U. (2001) argue that human capital matters on a regional level. Cuaresma runs a BMA model proving that increase in 10% population share

of workers with higher education is associated with 0.6 pp higher annual growth rates of GDP per capita in European regions.

Interestingly, the spatial effect of human capital has positive effect on economic growth (Lall & Yilmaz, 2001; Magrini, 1998). The free movement within the EU allows people to migrate with no problem. Policies against the barriers for factor mobility might be critical for the fast economic convergence. Contrary, Polasek and Berrer (2006) claim that migration is not always good. Due to free movement, countries are not able to stop the migration in critical cases. They claim that almost a half of the observed regions in the sample is not able to avoid decreasing demographic trend and will shrink. Also, Kaldewei, C. & Walz, U. (2001) find no significant effect from migration of human capital on economic growth.

Furthermore, the presence of universities in the regions positively affects the economic growth (Magrini, 1998). Universities affect the growth both directly and indirectly. Either universities are a research producer, or they provide human capital, both types of contribution positively increase the economic growth.

Other important economic growth determinants on a regional level coinciding with original theory are investments and initial income (Ledyeva & Linden, 2008; Błażejowski et al., 2016). However, investments being one of the main growth determinants in Solow growth model reduce its significance on the regional level (Kaldewei & Walz, 2001). Alternatively, larger investments in the industrial sector share proven to contribute more to economic growth than diversified investments in different industries (Magrini, 1998). The specialisation in one segment brings more benefits rather than spreading the investment portfolio among different industries. Nevertheless, investments in the manufacturing sector do not contribute to economic growth (Polasek and Sellner (2013).

Another way to explain economic growth is by adding fixed effects (Ding & Knight, 2011; Cuaresma et al., 2009; Cuaresma et al., 2014). The researchers have proven that capital cities tend to grow faster on average, as well as country specific effects are significant for some regions. They also provide the significant effects from regions located near the sea and within the pentagon area. There should be some other growth determinants within the area of fixed effect determinants that would explain the economic growth in the region. In fact, fixed effects are good control variables, but have almost no explanatory power. Additionally, the coastal effect has been proven to be insignificant in the latest research by Ding & Knight (2011).

The interest of this article is to find the uncovered explanatory variables and justify the statistical significance with economic reasoning. Although various studies applying BMA approach have been consistent in some growth determinants (Initial GDP, investments), they have also found additional determinants that are specific to each country or region. The idea of applying BMA to region-specific level allows realising alternative growth determinants that have not been considered before. Hence, the goal of the article is to

understand why some growth determinants appear to be significant; explain why some regions tend to grow faster than others; and discover new growth determinants.

METHODOLOGY

BMA is a standard approach to both account for model uncertainty and handle large datasets. In order to evaluate potential growth determinants, the authors use two different approaches: the cross-section of regions, the cross-section of regions with a spatial autoregressive (SAR) structure suggested by Cuaresma, Doppelhofer and Feldkircher (2009). Applying it together with the methods proposed by Levine and Renelt (1992) and Sala-i-Martin (1997), we run the following linear regression with $K + F$ variables in an $N \times K + F$ -dimensional matrix X :

$$y = \alpha i_N + \beta_F X_F + \beta_K X_K + \rho SY + \varepsilon \quad (1)$$

where an N -dimensional column vector y is economic growth for N European Union regions (NUTS2), α is the intercept term, i_N is an N -dimensional column vector of regions. We divide variables into two groups: factor accumulation/convergence variables (X_F) used by Solow-Swan and the rest variables (X_K) that can explain total factor productivity (TFP) differences between the regions, which are represented as β – a $K + F$ -dimensional vector of regression coefficients, being equal 0 if no regressors added. Additionally, the authors include in the regression spatial dependence structure and denote it with the variable S , which is an $N \times (N - 1)$ matrix and ρ being a degree of spatial autocorrelation, which is also represented as $N \times (N - 1)$ matrix. Non-zero ρ indicates the presence of spatial effect among the regions. Two approaches could be used to measure degree of spatial autocorrelation: (1) distance metrics, where distances might be calculated based on the centroid of the regions or (2) equal weight for all region's neighbours (LeSage & Parent, 2007). Finally, ε , an N -dimensional shock follows a normal distribution with zero mean and identity variance-covariance matrix.

The authors apply Bayesian Model Averaging (BMA) approach and add prior distribution for the parameters. The authors' focus is to compare the models with a diverse set of explanatory variables. According to Kass and Raftery (1995), the choice of the prior has a significant impact on posterior inclusion probabilities of the model. Fernandez, Ley and Steel (2001) proposed uniform prior $\rho = 2^{-K}$ on α and variance of the error term, which means that probability of adding a variable into regression is equal 0.5 exclusive of how many regressors are in the model, and g-prior on β . These priors are supported by LeSage and Parent (2006) and called "benchmark" prior distribution since these priors have a minor influence on the posterior distribution and overall results. Thus, the authors apply the uniform and g-prior combined for sampling distribution and state that the probability that one variable appears in the model is independent of other variables.

Model uncertainty given the data (D), if β is the coefficient of interest, can be assessed by weighing the uncertainty of all individual models. Models M_1, M_2, \dots, M_K are mutually exclusive and exhaustive. The authors use posterior inclusion probabilities (PIP) to determine variable's significance in determining the regional growth level. Posterior inclusion probability, denoted as $p(M_i|D)$, is calculated using equation (4) and Bayes rule as a sum of probabilities variable X_K being included in the regression.

$$p(M_i|D) = \frac{p(D|M_i)p(M_i)}{\sum_{k=1}^{2^K} p(D|M_k)p(M_k)} \quad (2)$$

where $p(M_i)$ is a probability of the M_i , which belongs to the sample of all the 2^K models; $p(D|M_i)$ is a probability of D given the model i (M_i) and a probability of the data (D) given the model M_i equals:

$$p(D|M_i) = \int p(D|\beta_x, M_i)p(\beta_x, M_i)\Delta\beta_x \quad (3)$$

where $p(D|\beta_x, M_i)$ is the observed likelihood, whereas $p(\beta_x, M_i)$ is prior density.

The authors repeat the same analysis for spatial autoregressive (SAR) structure by running the regression with an inclusion of country fixed effects. After determining which variables are important in explaining economic growth at the regional level, we calculate the posterior mean (PM), the mean of the distribution of coefficients before the explanatory variables – β_k .

The variance of the posterior density or posterior variance is determined as a sum of all conditional variances weighted across all the visited models with the estimated model uncertainties.

$$PSD = \sqrt{\sum_{i=1}^{2^K} p(M_i|D)var(\beta_k|D, M_i) + \sum_{i=1}^{2^K} p(M_i|D)[E(\beta_k|D, M_i) - E(\beta_k|D)]^2} \quad (4)$$

The results are analysed using Bayesian credible interval equal to 95%. This implies that with a large number of models observed, with 95% probability the true value will be within a given interval.

Lastly, the authors ensure that the results obtained using two different specifications are robust. An econometric theory does not provide the specific methodology for finding spillover weights in matrix S, the authors do a sensitivity analysis and adjust weights based on regions GDP per capita PPP.

DATA

The data include statistics on 276 European regions at second-level of Nomenclature of Territorial Units for Statistics (NUTS) classification valid from 1 January 2015 in the time period 2006–2015. The authors take a NUTS2 regions instead broader set of NUTS3 regions (1347), because of data availability.

In order to collect yearly data for possible determinants, the authors use ESPON (European Spatial Planning Observation Network) database for:

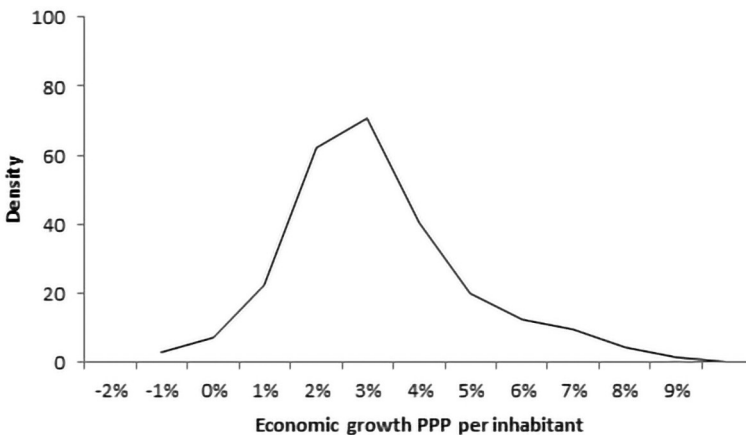
- Infrastructure variables, such as density of transportation network (e.g. rail density, road density), network connectivity and accessibility;
- Variables such number of nights spend by tourists, different types of emissions of carbon dioxide, and number of airports and seaports;
- Geolocation variables (Area, pentagon, coastal, capital city, etc.);

And EUROSTAT database to gather statistics on:

- Macroeconomic variables (Investments, initial GDP, industry structure, etc.);
- Demographic and human capital variables (Population growth, population, fertility, percentage of male population, level of educational attainment, etc.).

Moreover, the authors use an additional newly created variable – `university_top500` which is an index receiving value from 1 to 213 depending on the place in Shanghai Jiao Tong University Ranking 2005. The higher is the place in the ranking the bigger is the index value. 213 stands for the number of universities in Europe included in top 500 best universities ranking based on academic performance of the students – Nobel Prize and Field Medals winners, and bibliometric data. In case there are two or more universities within the area the sum of the respective indices is taken. This is a proxy for the quality of tertiary education in a region, since Shanghai Jiao Tong University Ranking 2005 is one of the top-ranking matrixes used to evaluate a university performance.

As a dependent variable, the authors take the average GDP per capita growth rate of the region from the year 2006 to 2015. The distribution of the dependent variable looks like a normal distribution (Figure 2).



Source: Graph created by the authors using the data described in the Data section

Fig. 2. **Distribution of average GDP per capita growth PPP of EU regions in the period from 2006 to 2015**

Despite Barro and Lee's (1994) finding that endogeneity had minor effect on coefficient estimates, the authors share Caselli F., Esquivel G., Lefort F. (1996) opinion that endogeneity plays a significant role in driving standard results in growth empirics. In order to mitigate the problem of endogeneity, the explanatory variables enter the model as close as possible to the beginning of the observed period.

Some of the variables are adjusted to country's area or population. This allows obtaining determinants which can be compared across the regions. The authors also adjust other types of variables: the authors calculate the shares of different types of patent from total amount of patents in the region to assess the technological innovation of the region, as well as, compute the shares of the workers with tertiary, secondary and primary education as a measure of human capital in a region.

The authors observe the following complications with the obtained statistics. First, European Union regional NUTS2 classification has changed, resulting in increasing number of regions. Thus, data collected prior to changes in classification will miss observations for newly created regions. Secondly, some of the determinants have missing values on NUTS2 classification or are reported using NUTS3 classification. Therefore, the authors adjust the data from NUTS3 regions into NUTS2 regions by either taking average of the NUTS3 value that constitute to NUTS2 or taking a sum of all NUTS3 region values.

All things considering, the list of the variables sums up into 42 potential regional growth determinants in a regional level.

RESULTS

The empirical results imply that economic growth can be determined by the following factors: population share with primary education, initial income level, population aged 30–49, share of industry in gross value-added, share of patents in information and communication technologies (ICT), spatial effect, pentagon effect, CO₂ ground emission, coastal effect, population growth effect, capital city, and universities which are included in top 500 Shanghai Jiao Tong world university ranking. The results are analysed using Bayesian credible interval equal to 95%.

Moreover, referencing to Ley and Steel (2009), the authors decided to use Beta-Binomial model prior, since the authors aimed to focus the distribution with prior model size (Figure 3). Due to primary sorting, the authors decreased uncertainty around the model size, thus, this prior reduces the risk “unintended consequences from imposing a particular prior model size” (Zeugner, 2011). The authors don't specify draws and burnins since the amount of the models can be assessed using the authors' computational systems.

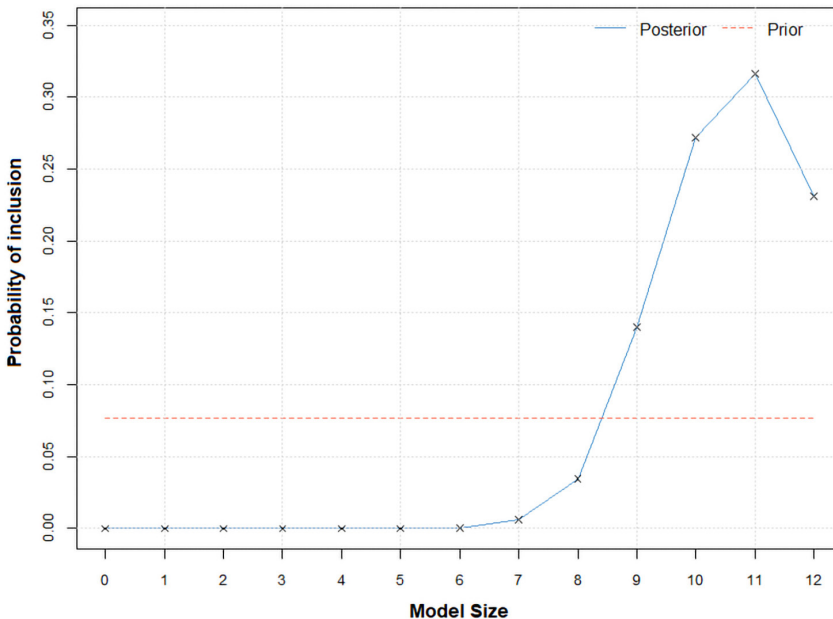
Table 1

Cross-section BMA regression

| | PIP | Posterior Mean | Posterior SD | Conditional Sign |
|---|--------|----------------|--------------|------------------|
| Primary education share | 1.0000 | -0.0516 | 0.0058 | 0 |
| Initial income level | 0.9999 | -0.0000 | 0.0000 | 0 |
| Population (30–49) share | 0.9999 | 0.2311 | 0.0493 | 1 |
| Industry share in GVA | 0.9998 | 0.0454 | 0.0096 | 1 |
| ICT patents share | 0.9989 | 0.0152 | 0.0037 | 1 |
| Spatial effect | 0.9957 | 0.1286 | 0.0355 | 1 |
| Pentagon | 0.9953 | 0.0065 | 0.0018 | 1 |
| CO ₂ ground | 0.9727 | -0.0042 | 0.0014 | 0 |
| Capital City | 0.7943 | 0.0041 | 0.0029 | 1 |
| University ranking | 0.7117 | 0.0000 | 0.0000 | 1 |
| Coastal | 0.6726 | -0.0018 | 0.0017 | 0 |
| Population growth | 0.4100 | -0.0528 | 0.1060 | 0 |
| Mean No. regressors 10.5515 Prior Model Size 6 (Random) % of models visited 100% | | | | |

Note. Conditional sign represents in what percentage of the models the factor has positive sign. 1 shows that factor has a positive sign in 100% of the models, while 0 shows that factor always has a negative sign.

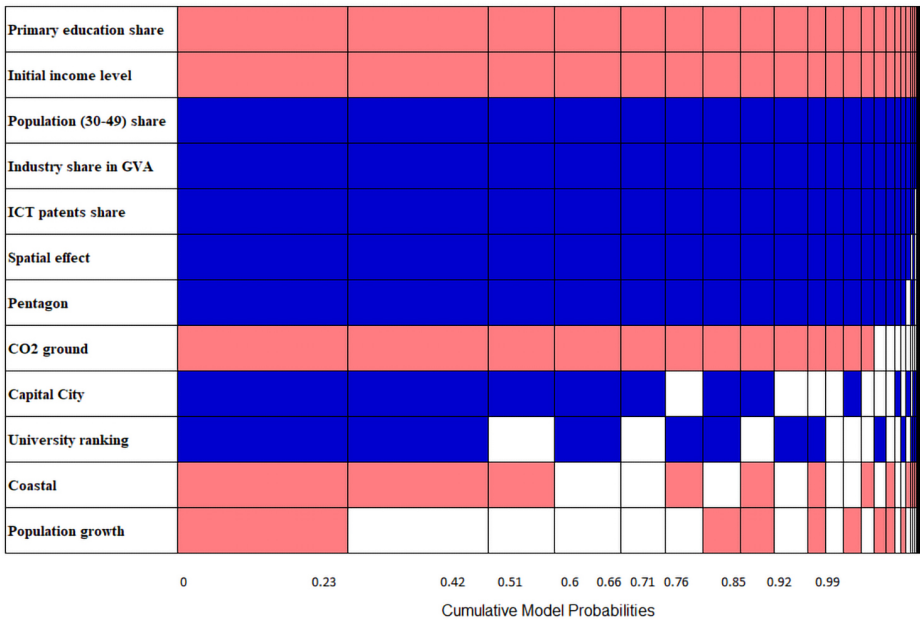
Source: created by the authors using the data described in the Data section and RStudio software.



Source: Graph created by the authors using data described in the Data section.

Fig. 3. **Posterior Model Size Distribution graph**

The best model explains 23% of the total cumulative model probabilities. From Figure 4, one can observe that posterior inclusion probability of initial income is very close to 100%. Additionally, it is negatively related to income growth, thus, the presence of conditional convergence is observed. In other words, when controlling for other factors, the lower is the initial income the higher is the subsequent economic growth.



Source: Graph created by the authors using the data described in the Data section and RStudio software.

Note: Blue colour (dark in black and white version) represents a positive relationship with GDP PPP per capita growth, while red colour (light in black and white version) represents a negative relationship. White areas show that variable was not included into the model.

Fig. 4. Cumulative Model Inclusion Probabilities based on the best 500 models

The most significant negative relation with economic growth has a share of poorly educated people. The more people have only primary education in a region the lower is the economic growth. This creates a bound to the possible explanation of economic growth – the more educated population the higher the economic growth. In fact, Li, Loyalka, Rozelle, and Wu (2017) argue that human capital accumulation matters depending on the state of the country. For a low-income country to reach the middle-income level a centralised mechanism for a mandatory pre-tertiary education is required; however, in order to jump to a high-income level, a decentralised tertiary education mechanism is required. Moreover, the significance of poorly educated population supports the inclusion of the variable representing an index of universities being in top 500 ranking.

In other words, low education variable shows the number of educated people in the region, but variable representing top 500 universities describes the quality of tertiary education in the respective territory.

The authors found that prime age has a significant positive relationship with GDP per capita growth and has a 100% posterior inclusion probability. The authors tested various age groups such as 30–34, 30–39, 30–44, 30–49, 35–59, 35–45, etc, and by including different age groups, the authors managed to understand that prime age population for European Union NUTS2 regions are people aged 30–49. Similarly, Gomez and De Cos (2008) find that increase in prime age persons aged 35–54 relative to younger counterparts aged 15–34 has a positive effect on GDP growth. The larger the share of working population the more GDP per capita could potentially be created. The chosen period represents people that have already graduated from a university and have accumulated some working experience.

A variable representing the emission of CO₂ has a posterior inclusions probability of 97.27% and it is negatively related to economic growth. This might be explained by the fact that there is too much ground transport in the regions, and cars can be declared as not one's assets, but rather a liability or bad investment. Also, this could be explained by the fact that the more cars are on the street the more pollution is present, thus, the more polluted regions develop slower when controlling for other factors.

Moreover, a share of information and communication technologies appears to be a good predictor of economic growth. The positive sign could relate to the ease of information access and consequently a faster growth (Farhadi, Ismail & Fooladi, 2012). Potential explanation could be that with an intense technological development the ICT might affect the GDP growth much stronger in 2018. For this study the authors used the ICT data from 2005 – when the information technology was not as broadly accessible as it is now. Thus, the effect of ICT might have an even higher correlation with GDP growth in 2018 than in 2005.

Population growth has a negative relation with economic growth, which is in line with the Solow model and the preceding literature. Logically, the higher the population growth the lower the income growth per inhabitant.

In turn, the spatial effect, being calculated using second method described in the methodology section, appears to be significantly and positively contributing to economic growth. The finding goes in line with Cuaresma (2014) with a posterior inclusion probability of 99.57%. Meaning that regions with a fast economic growth increase economic growth of neighbouring regions, which, later on, might benefit them back. This fact also could indicate that having no trade or travel barriers might be the prerequisite for higher spillover effect.

Interestingly, pentagon area has a positive economic effect on economic growth, which coincides with the results of Cuaresma et al. (2014). This means that there is a certain determinant within the area of the pentagon that would explain the growth. In turn, coastal regions tend to grow slower on average.

Although, the cities located near seas have an additional trading channel – merchant’s vessels, there is another explanatory variable which decreases economic growth. The authors tried to check this by adding variable representing the amount of nights spent in a hotel by tourists in the region, however, it ends up being insignificant; while variable Coastal retained its significance level. These issues are a great focus for the further research.

Lastly, following the findings of Cuaresma (2009), capital city regions tend to grow faster than other regions, keeping all other factors constant. Hence, the capital city variable, being a dummy variable, has a potential determinant that would explain the growth of the region. The authors tried to explain the capital city variable by applying a unique determinant – an index which is assigned to each region if a region has a university from top 500 Shanghai Jiao Tong university ranking in the world. The authors believe that quality of tertiary education in a region can foster the economic growth of a region.

In fact, the results are not so obvious. The capital city does not lose its significance in models with the given variables. The university variable explains the capital city growth for some models, but not enough to prove that it is the key determinant. This fact provides a space for further research, since a dummy variable should not be a significant factor because it might be not endogenous by itself; rather the capital city dummy depends on a wide variety of factors that are still to be researched.

ROBUSTNESS CHECK

The choice of the inclusion of each determinant is combined using a nested regression technique. It means that the authors added variables one by one in the regression and observe how the output has changed; this approach helps to define the specific set of variables that prove an economic meaning of the model. Hence, the authors started with a fundamental study by Solow and Swan (1956), which positions that investments have a positive economic effect on economic growth. Consequently, the next criterion to determine the best economic model is to identify variables that have proven to be significant in previous research. For instance, population growth has a negative effect (Mankiw, Romer and Weil, 1992; Kelley and Schmidt, 1995), positive spatial effect (Ciccone & Hall, 1996), negative effect from initial income (Solow, 1956, Kormendi and Meguire, 1985; Barro, 1991), etc.

When all the variables are included, the significance level of the variables is far from being absolute. This problem is mainly because of correlation among explanatory variables (see correlation matrix in Appendix A). The authors excluded variables which had almost perfect positive or negative correlation. Another problem is a big number of dummy variables which were included in the regression. It leads to failure in regression analysis if the output of dummy variables can be perfectly predicted from the result of another dummy variable.

Hence, the authors excluded all the country-specific effect in order to see the statistical reasoning of chosen variables, although country-specific effects proven to be important determinants of conditional convergence (Cuaresma et al., 2009). The authors also excluded variables with the least number of observations, for instance, variable representing average level of investments as a percentage of GDP in the years 2003 and 2005 is missing a lot of data and its inclusion will end up in a truncation of the data sample.

Lastly, it is important to carefully adjust the model with the variables which improve the statistical sense and economic meaning of the model. For example, unemployed aged 18–24, who also do not study in the university, appear to have a significant and positive effect on economic growth which contradicts the economic sense. One can argue that people aged 18–24 can take a part in shadow economy activities, however, the authors also adjusted the model for people with primary education. Interestingly, the variable representing people with primary education is significant in 100% of the models, while unemployed 18–24 lose its significance level, therefore, its economic meaning, since these people have primary education. In this case, the authors excluded such variables from the final regression because their significance was explained by other economic determinants.

Once the authors added industry gross value added the investments are no longer significant in the model. It might reflect that investments in industrial sector take a significant part of economic growth (Table 2). Also, one would expect industrial gross value added to take the significance away from pentagon variable since there are plenty of industrial giants within the area of pentagon such as BMW, Volkswagen, Bosch, BASF, Airbus, etc. However, pentagon variable almost retained its significance level (Appendix B). This means that there are more variables that can explain significant abnormal GDP per capita growth level of the regions located within pentagon area.

Table 2

BMA regression: Explanation of Investments' significance level with Industry GVA

| | PIP | Posterior Mean | Posterior SD | Conditional Sign |
|-------------------------------|--------|----------------|--------------|------------------|
| Nat_Income PPP per inh | 0.9993 | -0.0000 | 0.0000 | 0 |
| Population growth | 0.9969 | -0.8319 | 0.2126 | 0 |
| Investments | 0.9211 | 0.0615 | 0.0286 | 1 |

| | PIP | Posterior Mean | Posterior SD | Conditional Sign |
|-------------------------------|--------|----------------|--------------|------------------|
| Industry GVA | 0.9999 | 0.0774 | 0.0129 | 1 |
| Nat_Income PPP per inh | 0.9999 | -0.0000 | 0.0000 | 0 |
| Population growth | 0.4049 | -0.1528 | 0.2289 | 0 |
| Investments | 0.3757 | 0.0143 | 0.0230 | 1 |

Source: Table created by the authors using the data described in the Data section and RStudio software.

The regression (Table 3) showed that majority of the factors chosen and included indeed are related to economic growth. By applying OLS we check the robustness of the determinants. Evidently out of all factors only population growth loses its significance at 10% significance level, keeping all other factors constant.

Table 3

Linear regression: Spatial Autoregressive Model

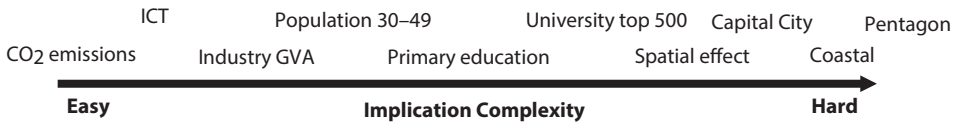
| | Estimate | Standard Error | t value | Pr(> t) | Significance level |
|----------------------------|-----------------|----------------|--------------|----------|--------------------|
| (Intercept) | -0.0206 | 0.0128 | -1.604 | 0.1100 | |
| ICT patents | 0.0149 | 0.0037 | 3.961 | 0.0000 | *** |
| Pentagon | 0.0062 | 0.0018 | 3.43 | 0.0007 | *** |
| Coastal | -0.0028 | 0.0014 | -1.891 | 0.0597 | * |
| Capital City | 0.0051 | 0.0023 | 2.177 | 0.0304 | ** |
| Nat_Income PPP per inh | -0.0000 | 0.0000 | -5.465 | 0.0000 | *** |
| Population growth | -0.1290 | 0.1340 | -0.963 | 0.3364 | |
| Industry GVA | 0.0445 | 0.0097 | 4.593 | 0.0000 | *** |
| Population (30–49) | 0.2163 | 0.0476 | 4.536 | 0.0000 | *** |
| University ranking | 0.0000 | 0.0000 | 1.902 | 0.0584 | * |
| Primary | -0.0499 | 0.0055 | -8.936 | 0.0000 | *** |
| CO ₂ ground | -0.0046 | 0.0013 | -3.493 | 0.0005 | *** |
| Spatial effect | 0.1278 | 0.0348 | 3.672 | 0.0002 | *** |
| Significance codes: | *** 0.01 | ** 0.05 | * 0.1 | | |

Source: Table created by the authors using the data described in the Data section and RStudio software.

Thus, the authors continued the analysis with Bayesian Model Averaging, in order to investigate what is the effect of these variables on economic growth in all potential models. Lastly, the authors investigated what is the most appropriate prior that should be used in BMA regressions. The authors concluded that due the notion that with sufficient data any low-information prior results will not change with the prior belief about the distribution of the parameters. Thus, the authors decided to use a Beta-Binomial model prior. The choose of this prior is in line with Carmen Fernandez, Eduardo Ley and Mark F. J. Steel paper that aims specified the usage of “automatic” or “benchmark” priors that can be applied in a situation with the large sample of visiting models (Fernandez et al., 2001).

DISCUSSION

The economic findings of the research have quite broad implications in policy analysis. Either the government or a local regulator can affect quite a few economic growth drivers. The complexity of the application of each variable is depicted on the Figure 5.



Source: Created by the authors.

Fig. 5. **Implication complexity of growth determinants**

For instance, the regulator can boost industrial investments, or increase the tax on CO₂ emissions to push up the economic growth in the region; or choose to increase government spending more in the information and communication technologies, as well as attract the middle age (30–49) population from abroad. To ensure that regions have enough funds to stimulate the economy, these policies might be implemented together. Therefore, funds for additional investments in industrial sector can be collected from increased taxes on CO₂ emission.

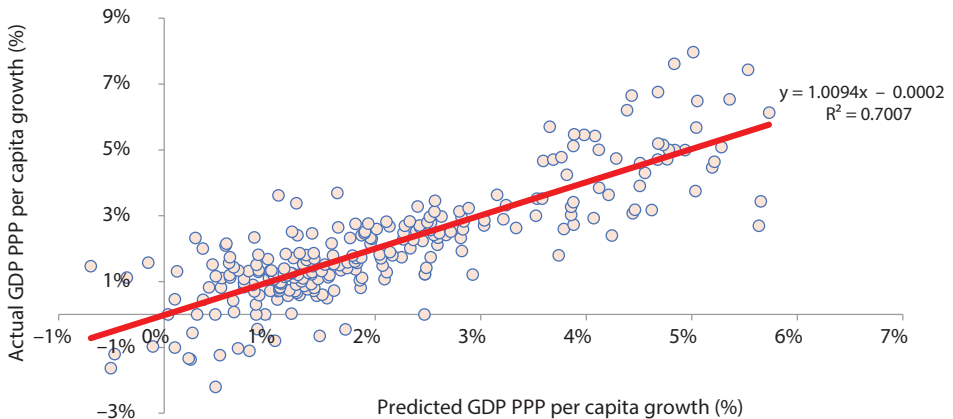
Although almost all the determinants require additional investments, some variables also require a significant amount of time to be implemented. One of the policies which is difficult to stimulate would be boosting education level. Although the major economies have a mandatory primary education, the higher education still remains an individual choice. The complexity comes when economic growth is determined by the inclusion of top 500 best universities in the world's rating and explaining the capital city effect. Although the capital city effect has decreased when controlling for best universities in the world, yet it is not excluded completely because some of the top world schools simply are not located in the capital city. For instance, such top-class universities as the University of Oxford, University of Cambridge, Utrecht University are not located in the capital city. Sometimes they could be even far from the capital city, but being one of the top schools in the world. Capital city effect does not lose its effect completely, but it is still decreased, because there are some top schools that are located in capital cities. For example, London School of Economics, Imperial College London, University Paris Sud, University of Helsinki, etc. are located in the capital city and boost the regional growth. In fact, this supports the argument that education is one of the significant determinants of economic growth since only a few universities located in the capital city were enough to decrease the posterior inclusion probability of the dummy variable from 87.74% to 79.43%. Moreover, in order to get a decent place in the ranking, a sufficient investment and time resources are required.

Furthermore, variables such as coastal or pentagon are time-invariant and cannot be stimulated or changed. Either a country does have access to the sea or it does not; or it is located in the pentagon area, or is located outside. Nevertheless, these variables are related to economic growth and, despite the inclusion of other variables, retain its high significance level. A potential explanation of the significance level of pentagon variable might be a unique set of the regions which are part of pentagon area. Such cities as Luxembourg – banking centre of Europe,

which is growing on 91 basis points faster than average region in European Union during the period from 2006 to 2015; or Milan – Europe’s most famous shopping city positively contributes to the growth of the region. Moreover, the major part of the pentagon area belongs to Germany. Growth rate of Germany is on 68 basis points higher than the average regional growth in European Union during the period from 2006 to 2015. Nevertheless, when controlling for industrial sectors and tourism the pentagon variable still retains its significance.

Coastal variable is negatively related to economic growth. One of the potential explanations might be the fact that regions near the seas developed earlier, thus, now have higher initial income and consequently lower growth rate. The remaining posterior inclusion probabilities might be due to the fact that coastal regions have an additional exposure to risks, such as a high exposure to tourism sector, thereby, exposure to seasonality issues; and additional non-related to economic development government spending, such as investments in cultural events, reconstructions, art or architecture. Analysis of regional unemployment level, government and consumer spending potentially can provide more coherent information and decrease significance level of the coastal determinant.

Nonetheless, the implication of each variable would have boosted the economic growth in a region, thus, to robustly estimate the effect of an economic policy in an individual region, the authors predict the economic growth of each region by the model (Appendix C). In fact, the value of R^2 suggests that predicted variables can explain about 70% of the actual economic growth during 2006–2015 period (Figure 6).



Source: Graph created by the authors

Fig. 6. **Predicted economic growth per capita growth rate versus actual economic growth per capita growth rate**

The x-axis depicts the predicted growth rate per capita, while the y-axis shows the actual growth rate per capita. Ideally, the closer is the red line to the symmetric

function $f(x) = x$, the better results are predicted. Nevertheless, the authors observed a slight bias towards positive growth; yet the trend line is quite close to being fully symmetric. For example, Campania, one of the slowest growing regions, has an economic growth rate per inhabitant equal to 0.45%, whereas, the model predicts the growth for the region of 0.37%; or Opole Voivodeship, small province in Poland and one of the fastest growing regions, has growth rate of 5.09%, whereas the model predicts the growth rate per inhabitant of 5.28% (Appendix C). Indeed, the model is biased towards an average region and is less evident when outliers or rare cases appear. For instance, București – Ilfov (Romania) is the fastest growing region in our sample during 2006–2015. Its actual growth rate per inhabitant is 7.97%, but the model predicted growth is only 5.01%. Such a high growth during the 9-year period is not a usual phenomenon, thus, it is considered rather a rare case than a recurrent event.

The difference between the actual economic growth and theoretically predicted growth per inhabitant does exist due to some unobserved economic factors. Nevertheless, the statistical development and data analysis tools have evolved over time, it is still impossible to catch all the determinants of economic growth. It is almost impossible to insert all the determinants in one model; hence, there will always be an unobserved factor. However, the authors' goal is not to target all the determinants, but rather the ones that affect the economic growth the most.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The authors were challenged to explain some of the previously developed determinants such as capital city effect or pentagon effect on economic growth. In fact, the inclusion of top 500 university ranking has not decreased significantly the posterior inclusions probability of the capital city effect. For further research, the authors suggest using universities that are located in capital cities only. These universities would directly influence the capital city variable and might explain the positive effect on economic growth from the capital city dummy variable. Due to the fact, that only part of best universities in the world is located in capital cities, it was enough to decrease the effect of capital city variable by 8.31%. Hence, the idea that good education might stimulate economic growth has been observed in the model and also is in line with the literature. As for pentagon determinant, the authors have controlled for investments in industrial sector including the area inside pentagon. Nevertheless, the effect of a region being located in pentagon area has not been changed dramatically. Mostly, it comes from the fact that many corporates within the area of pentagon are outsourcing production stages. Hence, the authors faced a problem of omitted variable bias, and a deeper look shall be taken to explore additional potential determinants of a pentagon effect.

Another limitation of the research is the data availability. Due to the fact that some regions either have not reported the data before 2006 or were not able to submit the statistics, regions with missing observations are not taken into account. Consequently, the authors decreased the dataset from 276 observations to 254 because of the data truncation. An alternative way for further research is determining growth determinants for NUTS3 regions to increase the number of observations.

As for improvement, it might be beneficial for the article to check the SAR specification results using approach proposed by Cuaresma, Doppelhofer and Feldkircher (2009). They adjusted the weights to the distance between the regions using the equation 9:

$$S_{ij} = d_{ij}^{-\theta}, \quad (5)$$

where, d_{ij} distance between region i and region j , calculated based on the centroid of the regions and criterion θ shows the degree of the sensitivity of distance to the weight of the region. When θ is being equal to 1, weight is completely inversely related to the distance between the regions, if the parameter is lower than one, a decay of weight declines, while an increase of θ will lead to a rise in the weight decay.

CONCLUSION

The article provides evidence of conditional beta-convergence among European NUTS2 regions, meaning that regions with a lower level of per capita income, controlling all the other factors, tend to grow faster than richer regions. The authors used post-crisis data to study the economic growth. The model explains about 70% of the economic growth per capita differences across the European regions. Furthermore, the authors found that the more people have only primary education in the region the lower is the economic growth. The authors also investigated other factors that depress the economy – high emission of CO₂ and rapid population growth. In turn, regions which are located in pentagon area, shaped by London, Paris, Munich, Milan, and Hamburg, with a high share of information and communication technologies patents and a high share of industry in GVA have higher economic growth. One of the main findings of the article is that the authors present the empirical evidence that education quality positively contributes to economic growth when controlling for top 500 best schools in the world, thus, not only quantity of education, but also quality of education matters. Also, the authors determined the prime age population of the European NUTS2 regions. People aged 30–49 provide the largest added value to the economic development of the region. The larger the share of working population the more GDP per capita could potentially be created. Following the findings of Cuaresma (2009), the authors also provide the evidence that capital city regions tend to grow faster than other regions, keeping all other factors constant. Moreover,

the economic growth is determined not only by internal factors but also by external factors – the neighbouring regions. The authors obtained that spatial effect appears to be significantly and positively contributing to economic growth. Hence, the rapid growth of neighbouring regions has a positive spillover effect on economic development of the regions.

The article indicates the importance of various economic growth determinants and the ease of implementation of each. As a result, this research might be helpful for regulators to correctly identify their policies and the direction of the structural reforms in order to ensure sustainable positive economic growth of the region and a country as a whole.

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APPENDICES

APPENDIX A. CORRELATION MATRIX

Table A.1

Correlation matrix

| | Primary | Secondary | Unempl | Empl | HighTech | ICT | WorkersLow | WorkersMed | Males_ % | Females_ % | CO ₂ _non-cars | CO ₂ _Land |
|--------------------------|---------|-----------|--------|-------|----------|-------|------------|------------|----------|------------|---------------------------|-----------------------|
| Primary | 1.00 | -0.85 | -0.08 | -0.11 | -0.13 | -0.17 | 0.99 | -0.82 | 0.27 | -0.27 | -0.05 | -0.05 |
| Secondary | | 1.00 | 0.17 | -0.09 | 0.11 | 0.11 | -0.85 | 0.99 | -0.28 | 0.28 | 0.04 | 0.03 |
| Unemployment | | | 1.00 | -0.75 | -0.04 | -0.14 | -0.07 | 0.10 | -0.04 | 0.04 | 0.08 | 0.06 |
| Employment | | | | 1.00 | -0.04 | 0.11 | -0.09 | -0.06 | 0.18 | -0.18 | 0.00 | 0.04 |
| HighTech | | | | | 1.00 | 0.74 | -0.13 | 0.11 | -0.16 | 0.16 | -0.09 | -0.11 |
| ICT | | | | | | 1.00 | -0.17 | 0.11 | -0.22 | 0.22 | -0.08 | -0.09 |
| WorkersLow | | | | | | | 1.00 | -0.82 | 0.28 | -0.28 | -0.05 | -0.05 |
| WorkersMed | | | | | | | | 1.00 | -0.25 | 0.25 | 0.05 | 0.03 |
| Males_ % | | | | | | | | | 1.00 | -1.00 | 0.07 | 0.08 |
| Females_ % | | | | | | | | | | 1.00 | -0.07 | -0.08 |
| CO ₂ non-cars | | | | | | | | | | | 1.00 | 1.00 |
| CO ₂ land | | | | | | | | | | | | 1.00 |

Note. Table created by the authors using the data described in the Data section and correlation function in Microsoft Excel 2016.

**APPENDIX B. BMA REGRESSION: EXPLANATION OF
PENTAGON'S SIGNIFICANCE LEVEL**

Table B.1

**BMA regression: Explanation of Pentagon's significance level with
Industry GVA**

| | PIP | Posterior Mean | Posterior SD | Conditional Sign |
|------------------------|------------|---------------------------|---------------------|-----------------------------|
| Nat_Income PPP per inh | 0.9999 | -0.0000 | 0.0000 | 0 |
| Pentagon | 0.9843 | 0.0093 | 0.0030 | 1 |
| Investments | 0.9119 | 0.0590 | 0.0284 | 1 |
| Population growth | 0.8786 | -0.5110 | 0.2799 | 0 |

| | PIP | Posterior Mean | Posterior SD | Conditional Sign |
|------------------------|------------|---------------------------|---------------------|-----------------------------|
| Industry GVA | 0.9999 | 0.0711 | 0.0127 | 1 |
| Pentagon | 0.9999 | -0.0000 | 0.0000 | 0 |
| Nat_Income PPP per inh | 0.8722 | 0.0065 | 0.0034 | 1 |
| Investments | 0.4182 | 0.0163 | 0.0239 | 1 |
| Population growth | 0.2541 | -0.0603 | 0.1522 | 0 |

Note. Table created by the authors using the data described in the Data section and RStudio software.

APPENDIX C. PREDICTIONS OF REGIONAL GDP PER CAPITA GROWTH (2006–2015)

| Nr | Region | Reality | Prediction | Nr | Region | Reality | Prediction | Nr | Region |
|----|---|---------|------------|-----|--|---------|------------|-----|---------------------------------|
| 1 | Stereia Ellada | -2.20% | 0.49% | 61 | Highlands and Islands | 1.04% | 1.85% | 121 | Mellersta Norrland |
| 2 | Ionia Nisia | -1.63% | -0.51% | 62 | Greater Manchester | 1.07% | 1.04% | 122 | Surrey, East and West Sussex |
| 3 | Kriti | -1.37% | 0.25% | 63 | Eastern Scotland | 1.08% | 2.09% | 123 | Länsi-Suomi |
| 4 | Dytiki Ellada | -1.34% | 0.23% | 64 | Dorset and Somerset | 1.08% | 0.76% | 124 | Pais Vasco |
| 5 | Anatoliki Makedonia, Thessalia | -1.23% | 0.53% | 65 | Comunidad Foral de Navarra | 1.08% | 1.46% | 125 | Galicia |
| 6 | Ipeiros | -1.20% | -0.47% | 66 | Principado de Asturias | 1.10% | 1.32% | 126 | Darmstadt |
| 7 | Kentriki Makedonia | -1.10% | 0.81% | 67 | Puglia | 1.11% | 0.55% | 127 | Helsinki-Uusimaa |
| 8 | Notio Aigaio | -1.02% | 0.70% | 68 | Lombardia | 1.11% | 0.99% | 128 | Herefordshire, Worcestershire |
| 9 | Thessalia | -1.00% | 0.10% | 69 | Bretagne | 1.12% | 1.88% | 129 | Friesland (NL) |
| 10 | Voreio Aigaio | -0.97% | -0.11% | 70 | Northumberland and Tyne and Wear | 1.12% | 0.62% | 130 | Prov. Hainaut |
| 11 | Dytiki Makedonia | -0.80% | 1.05% | 71 | Algarve | 1.12% | -0.36% | 131 | Gelderland |
| 12 | Border, Midland and West of Scotland | -0.65% | 1.47% | 72 | Essex | 1.12% | 1.23% | 132 | Groningen |
| 13 | Peloponnisos | -0.56% | 0.27% | 73 | Basse-Normandie | 1.13% | 1.56% | 133 | Overijssel |
| 14 | Attiki | -0.45% | 1.72% | 74 | Cataluña | 1.15% | 1.14% | 134 | Nord – Pas-de-Calais |
| 15 | Ciudad Autónoma de Madrid | -0.44% | 0.88% | 75 | Liguria | 1.17% | 0.49% | 135 | Abruzzo |
| 16 | Toscana | 0.00% | 0.31% | 76 | Leicestershire, Rutland and Leicestershire | 1.19% | 1.16% | 136 | Prov. Antwerpen |
| 17 | Umbria | 0.00% | 0.96% | 77 | Languedoc-Roussillon | 1.20% | 0.62% | 137 | Sydsverige |
| 18 | Marche | 0.00% | 0.48% | 78 | Zuid-Holland | 1.20% | 1.57% | 138 | Prov. Namur |
| 19 | Lazio | 0.00% | 0.87% | 79 | Provincia Autonoma di Trento | 1.20% | 1.27% | 139 | Prov. Liège |
| 20 | Lisboa | 0.00% | 0.04% | 80 | Castilla y León | 1.22% | 1.03% | 140 | Noord-Holland |
| 21 | Pohjois- ja Itä-Suomi | 0.00% | 2.46% | 81 | Nord-Est | 1.22% | 2.92% | 141 | Noord-Brabant |
| 22 | Canarias | 0.03% | 1.21% | 82 | La Rioja | 1.22% | 1.40% | 142 | Corse |
| 23 | Κύπρος (Κύπρος) | 0.08% | 0.66% | 83 | Drenthe | 1.22% | 2.47% | 143 | Limburg (NL) |
| 24 | Molise | 0.31% | 0.87% | 84 | Etelä-Suomi | 1.23% | 2.47% | 144 | Cheshire |
| 25 | Illes Balears | 0.42% | 0.65% | 85 | Haute-Normandie | 1.23% | 1.08% | 145 | Gießen |
| 26 | Campania | 0.45% | 0.37% | 86 | Åland | 1.24% | 1.13% | 146 | Norte |
| 27 | Sicilia | 0.46% | 1.07% | 87 | Derbyshire and Nottinghamshire | 1.25% | 1.21% | 147 | Schleswig-Holstein |
| 28 | Ciudad Autónoma de Canarias | 0.46% | 0.10% | 88 | South Western Scotland | 1.26% | 1.20% | 148 | Östra Mellansverige |
| 29 | Northern Ireland | 0.50% | 1.54% | 89 | Prov. Luxembourg (BE) | 1.27% | 1.37% | 149 | Bremen |
| 30 | East Yorkshire and North East Yorkshire | 0.57% | 1.45% | 90 | Wien | 1.29% | 2.11% | 150 | Köln |
| 31 | Andalucía | 0.57% | 1.17% | 91 | Aragón | 1.29% | 1.40% | 151 | Stockholm |
| 32 | Shropshire and Staffordshire | 0.59% | 0.90% | 92 | Aquitaine | 1.29% | 0.89% | 152 | Zeeland |
| 33 | Bedfordshire and Hertfordshire | 0.60% | 1.28% | 93 | Alentejo | 1.31% | 0.12% | 153 | Hannover |
| 34 | Région de Bruxelles-Capitale | 0.60% | 1.50% | 94 | Emilia-Romagna | 1.32% | 0.80% | 154 | Övre Norrland |
| 35 | Cantabria | 0.67% | 1.26% | 95 | Tees Valley and Durham | 1.32% | 1.49% | 155 | Düsseldorf |
| 36 | Castilla-La Mancha | 0.71% | 0.85% | 96 | West Wales and The Valleys | 1.33% | 1.00% | 156 | Provincia Autonoma di Lombardia |
| 37 | Piemonte | 0.71% | 1.08% | 97 | Extremadura | 1.34% | 0.70% | 157 | Kärnten |
| 38 | Cornwall and Isles of Scilly | 0.71% | 1.24% | 98 | Merseyside | 1.34% | 1.01% | 158 | Småland med öarna |
| 39 | East Wales | 0.72% | 1.42% | 99 | Auvergne | 1.35% | 0.89% | 159 | Severozápad |
| 40 | Valle d'Aosta / Vallée d'Aoste | 0.72% | 1.00% | 100 | Utrecht | 1.35% | 1.67% | 160 | Prov. West-Vlaanderen |
| 41 | Franche-Comté | 0.73% | 1.61% | 101 | Hampshire and Isle of Wight | 1.37% | 1.81% | 161 | Prov. Oost-Vlaanderen |
| 42 | Comunidad Valenciana | 0.73% | 1.09% | 102 | Bourgogne | 1.39% | 1.14% | 162 | Steiermark |
| 43 | Región de Murcia | 0.74% | 1.18% | 103 | Comunidad de Madrid | 1.41% | 1.73% | 163 | Prov. Limburg (BE) |
| 44 | Região Autónoma da Madeira | 0.77% | 1.36% | 104 | Flevoland | 1.42% | 2.48% | 164 | Västverige |
| 45 | Devon | 0.80% | 1.09% | 105 | Provence-Alpes-Côte d'Azur | 1.44% | 0.66% | 165 | Île de France |
| 46 | Champagne-Ardenne | 0.81% | 1.42% | 106 | Gloucestershire, Wiltshire and Gloucestershire | 1.47% | 1.41% | 166 | Tirol |
| 47 | Lorraine | 0.81% | 1.86% | 107 | Região Autónoma dos Açores | 1.47% | -0.70% | 167 | Trier |
| 48 | Limousin | 0.82% | 0.54% | 108 | Alsace | 1.49% | 2.07% | 168 | Prov. Vlaams-Brabant |
| 49 | North Yorkshire | 0.82% | 0.43% | 109 | Berkshire, Buckinghamshire and Oxfordshire | 1.50% | 1.66% | 169 | Niederösterreich |
| 50 | Sardegna | 0.83% | 1.10% | 110 | Pays de la Loire | 1.51% | 0.87% | 170 | Karlsruhe |
| 51 | West Midlands | 0.84% | 0.76% | 111 | Basilicata | 1.52% | 1.52% | 171 | Oberbayern |
| 52 | South Yorkshire | 0.87% | 1.33% | 112 | Lincolnshire | 1.52% | 0.46% | 172 | Münster |
| 53 | Calabria | 0.90% | 0.84% | 113 | Rhône-Alpes | 1.54% | 1.32% | 173 | Saarland |
| 54 | Kent | 0.91% | 1.25% | 114 | Midi-Pyrénées | 1.54% | 1.61% | 174 | Dél-Dunántúl |
| 55 | Centre | 0.93% | 1.39% | 115 | Poitou-Charentes | 1.57% | 0.61% | 175 | Oberösterreich |
| 56 | West Yorkshire | 0.95% | 1.11% | 116 | East Anglia | 1.57% | 1.83% | 176 | Közép-Magyarország |
| 57 | Friuli-Venezia Giulia | 0.95% | 0.76% | 117 | Centro (PT) | 1.58% | -0.15% | 177 | Prov. Brabant Wallon |
| 58 | Picardie | 0.97% | 1.09% | 118 | Southern and Eastern Ireland | 1.59% | 1.74% | 178 | Vorarlberg |
| 59 | Veneto | 0.99% | 1.10% | 119 | Hamburg | 1.61% | 1.81% | 179 | Lüneburg |
| 60 | Lancashire | 1.01% | 1.30% | 120 | Norra Mellansverige | 1.66% | 1.35% | 180 | Severozapaden |

| Reality | prediction | Nr | Region | Reality | prediction | Nr | Region | Reality | prediction |
|---------|------------|-----|----------------|---------|------------|-----|-------------------|---------|------------|
| 1.68% | 0.98% | 181 | Arnsberg | 2.70% | 2.28% | 241 | Wielkopolskie | 5.43% | 4.08% |
| 1.70% | 1.42% | 182 | Kassel | 2.70% | 2.42% | 242 | Malopolskie | 5.46% | 3.98% |
| 1.71% | 2.05% | 183 | Praha | 2.70% | 3.03% | 243 | Łódzkie | 5.48% | 3.89% |
| 1.71% | 1.82% | 184 | Jihozápad | 2.73% | 3.88% | 244 | Yugozapaden | 5.68% | 5.04% |
| 1.72% | 1.22% | 185 | Koblenz | 2.76% | 1.81% | 245 | Mazowieckie | 5.71% | 3.65% |
| 1.73% | 1.87% | 186 | Salzburg | 2.77% | 1.93% | 246 | Lietuva | 6.14% | 5.73% |
| 1.74% | 2.53% | 187 | Detmold | 2.79% | 2.53% | 247 | Dolnośląskie | 6.21% | 4.39% |
| 1.74% | 0.62% | 188 | Rheinessen- | 2.80% | 2.49% | 248 | Sud-Vest Oltenia | 6.49% | 5.05% |
| 1.74% | 2.25% | 189 | Burgenland (A) | 2.82% | 2.10% | 249 | Vest | 6.54% | 5.36% |
| 1.79% | 1.60% | 190 | Unterfranken | 2.83% | 2.33% | 250 | Nord-Vest | 6.66% | 4.43% |
| 1.80% | 1.78% | 191 | Berlin | 2.83% | 2.84% | 251 | Centru | 6.77% | 4.68% |
| 1.80% | 3.74% | 192 | Freiburg | 2.86% | 3.03% | 252 | Sud - Muntenia | 7.44% | 5.53% |
| 1.80% | 2.16% | 193 | Dresden | 2.89% | 3.21% | 253 | Sud-Est | 7.62% | 4.83% |
| 1.81% | 1.34% | 194 | Severovýchod | 2.93% | 4.07% | 254 | București - Ilfov | 7.97% | 5.01% |
| 1.81% | 0.89% | 195 | Weser-Ems | 2.96% | 2.82% | | | | |
| 1.82% | 2.04% | 196 | Mittelfranken | 2.97% | 2.52% | | | | |
| 1.84% | 1.15% | 197 | Schwaben | 2.98% | 2.63% | | | | |
| 1.86% | 1.28% | 198 | Sachsen-Anha | 3.00% | 3.52% | | | | |
| 1.86% | 1.42% | 199 | Észak-Alföld | 3.03% | 3.86% | | | | |
| 1.90% | 2.14% | 200 | Moravskoslez | 3.08% | 4.44% | | | | |
| 1.93% | 2.82% | 201 | Mecklenburg- | 3.12% | 2.56% | | | | |
| 2.01% | 0.37% | 202 | Tübingen | 3.13% | 2.80% | | | | |
| 2.01% | 2.33% | 203 | Közép-Dunár | 3.18% | 4.62% | | | | |
| 2.09% | 0.58% | 204 | Észak-Magyar | 3.19% | 4.46% | | | | |
| 2.12% | 2.59% | 205 | Brandenburg | 3.23% | 2.88% | | | | |
| 2.15% | 0.59% | 206 | Střední Čechy | 3.27% | 3.86% | | | | |
| 2.15% | 1.95% | 207 | Stuttgart | 3.28% | 2.40% | | | | |
| 2.16% | 1.59% | 208 | Niederbayern | 3.32% | 3.24% | | | | |
| 2.23% | 2.45% | 209 | Cumbria | 3.38% | 1.25% | | | | |
| 2.27% | 2.36% | 210 | Dél-Alföld | 3.42% | 3.88% | | | | |
| 2.29% | 2.26% | 211 | Yugoiztochen | 3.44% | 5.65% | | | | |
| 2.30% | 1.97% | 212 | Oberfranken | 3.45% | 2.57% | | | | |
| 2.33% | 2.81% | 213 | Braunschweig | 3.52% | 3.53% | | | | |
| 2.33% | 1.95% | 214 | Thüringen | 3.52% | 3.58% | | | | |
| 2.33% | 1.76% | 215 | Malta | 3.62% | 1.08% | | | | |
| 2.33% | 0.30% | 216 | Severen tsentr | 3.63% | 4.21% | | | | |
| 2.33% | 2.59% | 217 | Oberpfalz | 3.64% | 3.16% | | | | |
| 2.34% | 0.85% | 218 | North Eastern | 3.70% | 1.64% | | | | |
| 2.40% | 4.24% | 219 | Yuzhen tsentra | 3.75% | 5.03% | | | | |
| 2.41% | 1.26% | 220 | Jihovýchod | 3.85% | 4.12% | | | | |
| 2.41% | 1.87% | 221 | Střední Morav | 3.91% | 4.51% | | | | |
| 2.42% | 2.67% | 222 | Severoiztoche | 4.24% | 3.81% | | | | |
| 2.42% | 2.56% | 223 | Nyugat-Dunár | 4.31% | 4.56% | | | | |
| 2.47% | 1.40% | 224 | Lubuskie | 4.47% | 5.19% | | | | |
| 2.47% | 1.90% | 225 | Východné Slo | 4.60% | 4.51% | | | | |
| 2.47% | 2.61% | 226 | Západné Slove | 4.65% | 5.21% | | | | |
| 2.49% | 2.27% | 227 | Zachodniopon | 4.67% | 3.59% | | | | |
| 2.51% | 1.21% | 228 | Świętokrzyski | 4.71% | 3.69% | | | | |
| 2.52% | 1.90% | 229 | Kujawsko-Po | 4.71% | 4.68% | | | | |
| 2.52% | 2.72% | 230 | Eesti | 4.72% | 4.77% | | | | |
| 2.53% | 2.39% | 231 | Warmińsko-M | 4.74% | 4.28% | | | | |
| 2.57% | 2.52% | 232 | Bratislavský k | 4.78% | 3.76% | | | | |
| 2.59% | 2.83% | 233 | Latvija | 5.00% | 4.94% | | | | |
| 2.60% | 3.79% | 234 | Podlaskie | 5.00% | 4.84% | | | | |
| 2.60% | 2.01% | 235 | Śląskie | 5.00% | 4.78% | | | | |
| 2.63% | 3.33% | 236 | Pomorskie | 5.01% | 4.12% | | | | |
| 2.65% | 1.65% | 237 | Opolskie | 5.09% | 5.28% | | | | |
| 2.65% | 2.42% | 238 | Lubelskie | 5.13% | 3.88% | | | | |
| 2.68% | 2.13% | 239 | Podkarpackie | 5.15% | 4.73% | | | | |
| 2.70% | 5.64% | 240 | Stredné Slove | 5.20% | 4.68% | | | | |

THE IMPORTANCE OF CREATIVITY FOR BUSINESS DEVELOPMENT IN LATVIA

AIJA STAŠKEVIČA
MARGARITA DUNSKA

Abstract

Today, the importance of innovation is particularly emphasised, and since creativity is the basis of innovation it is important to understand the importance of its development. This is especially essential in creative industries where creativity is the main asset of companies. It is significant to understand the factors influencing creativity in order to be able to purposefully stimulate its development. The purpose of the research is to assess the importance of creativity for the development of the company's competitiveness, determine the attitude of representatives of the Latvian creative industries towards the development of creativity, its importance as well as draw conclusions about the possibilities of its development. To meet the purpose of the research, the research methods were used as follows: document analysis, text analysis, content analysis, statistical analysis methods and questionnaire. The results of the research showed that creativity and creative industries are influenced by a wide range of factors, their development can be stimulated, and the company's creative environment can positively influence the sharing of ideas among the employees. Representatives of the Latvian creative industries understand the importance of development of the individual creativity of employees as one of the main competitive advantages in the company, but among them there is no unequivocal attitude towards whether creativity can be taught and whether it needs to be coordinated. It was also concluded that the representatives of the above industries implement innovations and focus more on product innovation.

Keywords: Latvia, creativity, creative industries, company development

JEL code: L26, L89

INTRODUCTION

In the 21st century, the increasing export capacity of the developed EU countries is associated with creative capital. Today, changes in the global economy take place including the transition from resource-intensive industries to creative industries. Creative industries are the driving force of the economic growth, one of the fastest growing sectors in the global economy gaining increasingly important place in the national and global economy.

According to the Sustainable Development Strategy of Latvia until 2030, the source of competitiveness of these sectors is human creativity, imagination, intuition, i.e. the characteristics that depend on culture (The *Saeima* of

the Republic of Latvia, 2010). Creativity development is able to increase the performance of company employees; therefore, it is important to promote the development of creativity and creative thinking that can potentially create products with greater added value. And since creativity is an intangible factor at the heart of innovation, it is subject to constant change and is not easily assessed; in practice, problems can arise in developing this capability in companies. It is important to improvise in unexpected and non-standard situations. So, it is essential to understand the creativity concept to be able to develop it.

The Latvian creative industries are the object of the research. The subject of the research is creativity management and development in the Latvian creative industries. The purpose of the research is to substantiate the importance of creativity development in business efficiency increase in the Latvian creative industries.

The main objectives are to define the concept and the importance of creativity development, list factors which influence creativity and define the possibilities of creativity measurement and assessment. The other objective is to specify the research methodology, as well as analyse the attitude and practice of creativity development in companies of the Latvian creative industries. At the end of the research, conclusions are given in order to increase the development of creativity in creative industry companies.

To meet the purpose of the research, the research methods were used as follows: document analysis, text analysis, content analysis, statistical analysis methods (grouping, comparison, statistical indicator analysis – calculation of the mean, mode, median and relative values, and correlation analysis) and a questionnaire. The data sources used in the research are: official statistical data of Latvia, international and Latvian publications in collections of scientific articles as well as information sources available on the Internet.

Limitation of investigation is that a questionnaire was distributed only among creative industry representatives in Latvia, and 136 valid questionnaires were received.

RESEARCH RESULTS AND DISCUSSION

THE ESSENCE OF CREATIVITY

Creativity and innovation are considered to be the engines of economic growth. Creativity is one of the most important factors contributing to a more complete and satisfying life, and is one of the main keys to survival in modern organisations (Sik, 2016). Various creativity tools and techniques the use of which is the organisation's competitive advantage have been widely practiced in larger companies over the last decades (Bertoncelli, Mayer, Lynass, 2016). Regardless of the field of activity, if a company continues operating without changes, it may cause long-term risks in comparison to those trying new ways

to create better products, approaches, processes or services and continuously improve. “If a company does not make changes, others will do it faster and will be more competitive as a result of creative and innovative approach” (Revelle, 2014).

Creativity is extensively explored, and there is still a debate among scholars as to whether creativity is a feature affecting different fields or its consequences are specific in a particular field, for instance, art, music, and mathematics (Schlee and Harich, 2014). At present, there are more than 100 creativity definitions (Sik, 2016).

T. Amabile, M. Mumford, and S. Gustafson describe creativity as “the emergence of a new and potentially useful idea to achieve the desired goals” (Mumford and Gustafson, 1988, Bratnicka, 2015). Professor M. Boden stated that creativity is “the ability to come up with ideas and artefacts that are new, striking, and valuable” (Boden, 2011). G. Cox defines it in Cox Review of Creativity in Business as “generating a new idea or way of looking at existing problems – or the possibility to see new opportunities using new technologies or changes in the market” (Cox, 2005). According to the findings of the United Nations Conference on Trade and Development (UNCTAD), the term “creativity” relates to originality, imagination, innovation, inspiration, imagination and inventiveness. It is an essential feature of people who are imaginative, resourceful and capable of finding great knowledge-based ideas, and these ideas are the essence of intellectual capital” (UNCTAD, 2008). The Sustainable Development Strategy of Latvia until 2030 states that “creativity is an inherited and developed personality trait/ability to create original and new-value images”. Creative activity helps discover new opportunities and forms for better cohabitation and activity models, adapting to new conditions and transforming existence by means of creative imagination and initiative” (The *Saeima* of the Republic of Latvia, 2010).

In general, most of the respective literature defines creativity as a process that brings something new and useful (Chang et al., 2016).

In practice, there may be a lack of clarity between creativity and innovation; that is why, to reduce this uncertainty, differences between concepts will be defined. Creativity is the ability to find original ideas, i.e. see one more or several different ways of doing something. Thus, creativity is the ability to invent new things or create new combinations of things, whereas innovation is the ability to actually do new things. Innovations create new things or solve a problem by putting a new combination together (Revelle, 2014). So, creativity is thinking, and innovation is implementation.

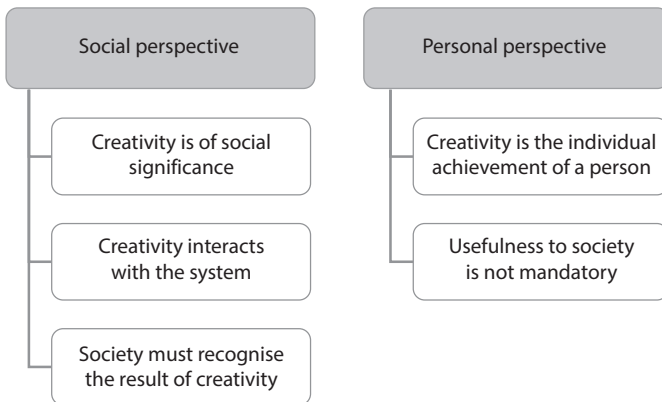
Over time, two different ways of defining creativity have been developed (Figure 1).

D. McKinnon stated that creativity is not only the generation of new ideas; it should also be of social significance (MacKinnon, 1965). From the system view, creativity is the process resulting from interaction in a particular system, and creativity matters only in relation to the system which assesses it. This social perspective emphasises that creativity is not a separate process, but requires

a welcoming audience to implement creative ideas; so, without any kind of public recognition a new idea cannot be considered as creativity. Based on this point of view, creativity stems from three elements in relation to the system in which interact:

- (1) a culture with symbolic rules;
- (2) a person bringing creativity in the symbolic area;
- (3) experts who recognise and confirm innovation (Sik, 2016).

On the other hand, creativity is defined, from a personal perspective, as “the psychological involvement of a person in creative activity”, and emphasis is placed on the person’s achievements regardless of their usefulness to society. Professor R. Sternberg emphasised novelty and high quality, and did not emphasise social usefulness, which could be dealt with differently in different fields. Even though in the standard definition of creativity, i.e. creativity requires originality and efficiency, a company may have a different point of view on what is efficiency (Sternberg, 1999). Thus, from a personal perspective, social usefulness is regarded as an unnecessary limitation in creativity.



Source: authors’ construction based on Sik, 2016

Fig. 1. **Prospects for Defining Creativity**

In the various fields of human activity, the characteristics of creativity can be formulated differently. For instance, artistic creativity involves imagination and the ability to create original ideas, or speech abilities as to how to interpret the world, express text, sound and image. Economic creativity is a “dynamic process that leads to innovation in technology, business practice, marketing, and is closely linked to gaining competitive advantage in the economy” (Sik, 2016). Organisational creativity is defined as the ability of an organisation to create an idea that is simultaneously new and useful. Individual creativity plays an important role in every organisation’s creativity. The existence of a creative team depends on creative individuals, and the existence of a creative organisation

depends on creative teams. The organisation's performance is maximised when the type and degree of individual (team) investment is differentiated in a collective outcome. Collective creative practice can facilitate the effectiveness of an organisation only if each member of the team makes a distinct contribution influencing his or her particular creativity but coordinates what he or she does with the other group members in organisations. With increasing complexity of the requirements and uncertainties, the organisation's (team's) contribution and effectiveness must be relatively different from team (individual) contribution and efficiency (Bratnicka, 2015).

Due to the essential role played by creativity in the development of a company, both the researchers and practitioners are trying to find ways to promote and develop creativity, and through this process to also facilitate innovation. According to the latest literature, creativity can indeed be stimulated, maintained and can be learned. There are different methods of creativity stimulation used by the companies. The creativity stimulation methods most commonly used in Europe are brainstorming and multifunctional teams.

Brainstorming is one of the most popular and most recognisable methods in all business practices. It is a creative task – generating ideas within a group. This technique is often used in the innovation development process, especially at an early stage.

Likewise, innovative companies rely extensively on the interfunctional (or multi-functional) teams when it comes to the development of new products since they accelerate the product development process (Botrić and Božić, 2015). R. Cooper concluded that identified interpersonal teams are one of the most important success factors in the innovation projects (Cooper, 1999). Interfunctional teams contribute to the success of innovative projects, but they are not easy to implement. This is mainly due to the different approaches, goals of the group members, as well as potential conflicts that may arise between business functions. Team responsibility and organisational culture that supports the team work could contribute to the successful multi-functional team implementation. However, this requires a rather developed organisational culture.

Work specialisation is often associated with boredom and monotonous work with a limited number of operations done each day. In these situations, it is good to engage the work rotation schemes to provide a better understanding of the activities of other departments, which could ultimately stimulate the creativity of employees. However, work rotation has disadvantages if employees find some work places to be less attractive or valuable. In addition, agreeing on the respective salary rates to do different jobs may be topical.

In turn, financial remuneration can potentially ensure the meeting of the organisation's diverse goals, including innovation-related ones. However, it does not always mean that this would lead to the results desired, and even scientific literature captures the negative effects of remuneration on creativity and innovation. Therefore, based on the scientific evidence, financial remuneration schemes should

not include the goal of achieving the specific results, but rather the desired action which is particularly important in innovation and creativity. Benefits should include competencies, attempts and achievements in creativity (Botrić and Božić, 2015). F. Ederer and G. Manso also concluded that incentive payments allowing for early failure stimulate innovation (Ederer and Manso, 2013).

Non-financial incentives such as public recognition, more interesting position, decision-making autonomy, job security and an attractive location are used to reward employees. G. Oldham and A. Cummings proved that the encouragement of the superior is of great importance in the facilitation of the employee's creativity (Oldham and Cummings, 1996).

Many problem-solving methods are taught at large universities and companies with the purpose to promote ideas and enhance creativity (Bertoncelli, Mayer and Lynass, 2016). A person can be creative, talented and ingenious from birth but, as it has already been mentioned, creativity can be developed. M. Basadur, M. Wakabayashi and G. Graen have shown that training programmes have a positive effect on the creativity of employees (Basadur, Wakabayashi and Graen, 1990).

The above methods are among the best tools for promoting creativity and, as a result, innovation, but the implementation of these methods requires skills and competence. Given the complexity of creativity and innovation processes, positive results cannot be guaranteed.

So nowadays, creativity is an important person's quality; and even though there still is a dispute as to whether creativity must be recognised by society, it needs to bring something new and useful in business. The more different the contribution the members of the organisation's teams make, the greater results they can achieve. Therefore, individual creativity plays an important role in each organisation's creativity, but its action must be coordinated. Creativity is developed and trained in companies since it is the basis for innovation, which today is one of the most important drivers of the economy and is the core asset and competitive advantage of creative industries.

The term "creative industries" was first documented in Australia in 1994, but it became more widespread in 1997 when the United Kingdom government Department of Culture, Media and Sport (DCMS) formed creative sectoral working group (Marinova and Borza, 2014). In 1998, DCMS published the creative industries mapping document including a definition and thirteen sub-sectors which were no longer referred to as cultural industries, as before (Maryunani and Mirzanti, 2015). DCMS used the term "creative industries" to classify industries originating from individual creativity, skills and talent, and having potential for wealth creation and job creation through the generation and use of intellectual property (Lee and Drever, 2013). According to the DCMS's creative industry mapping document, creative industries are: advertising, architecture, art and antiquities market, crafts, design, fashion, cinema, video and photography, interactive entertainment software (computer games), music, performing arts, publishing, software and computer services, television and radio (Sung, 2015).

The Ministry of Culture of the Republic of Latvia also includes similar industries in the cultural and creative industries: architecture, design, cinema, performing arts, visual arts, music, publishing, television, radio and interactive media, advertising, computer games and interactive software, cultural heritage, cultural education, recreation, entertainment and other cultural activities (Ministry of Culture, RL 2018).

Creative industries stand out from the rest because their products include symbolic and aesthetic values. It has important consequences for pricing and market entry. For consumers, the value of such products exceeds their value in use and is not directly related to the cost of production.

FACTORS INFLUENCING CREATIVITY AND CREATIVE INDUSTRIES

Creativity is influenced by many factors. The research will summarise the main factors influencing creativity that are most frequently observed in the scientific literature. According to E. Martinaitytė and R. Kregždaitė, the research on *The Factors of Creative Industries Development in Nowadays Stage*, the creative industry sector is highly influenced by the costs of culture and recreation and the level (index) of the people's creativity. The creative industry sector is moderately influenced by: government expenditure for culture, number of patents per million inhabitants, employment rate in research and development, number of students applying for art and humanities, and the level of tolerance. The level of employment in creative industries, the share of their exports, government expenditure for research and development have a low degree of influence (Martinaitytė and Kregždaitė, 2015).

R. Sternberg pointed out that the essence of creativity is rather complicated since it requires a lot of such resources as intellectual skills, knowledge, motivation, personality, style of thinking and environment. Exactly the environment is one of the essential components of creativity, but it is important to use all of the above resources rather than to be their owners (Sternberg, 2006). It also implies that creativity is not only an essential feature – it can be developed and facilitated.

The American theorist R. Florida suggested that the city's creative community is a key element in the development of creative industries. He put forward the theory of 3 T's suggesting that creative talent, creative technology, and the city's cultural tolerance are essential for the development of the city's creative industries (Florida, 2002).

J. Zhou, C. Shalley et al. argued that creativity of employees is a function of personal qualities related to the context of work and interacts with the personal and contextual parameters (Zhou and Shalley, 2009; Oldham and Cummings, 1996). Thus, creativity depends on the situation. Namely, a person can be creative without a creative personality, and in terms of creativity and entrepreneurship it can derive from situations, contexts and other factors rather than from individual factors related to personality. Like W. Johnson et al. wrote, "even very heritable features can be strictly manipulated by the environment" (Johnson et al., 2009).

T. Amabile used a model of creativity and innovation components that includes organisational motivation to innovate. Dimensions included the availability of resources, time for ideas, learning, compliance with freedoms and challenges, and other factors. Management plays an important role in promoting a creative environment through the provision and management of a work environment in which creative individuals can operate. In the work environment and climate geared towards creative thinking, there is a much greater potential for production of creative products than in a company with a slow, bureaucratic structure (Amabile, 1988).

M. Jensen and S. Beckmann measured the organisational structure and climate and found that innovation and creativity were strategic disciplines depending on social relations. The key innovations and dimensions of creativity driving forces are support for ideas, dynamism, debate, risk taking and ideas (Jensen and Beckmann, 2009).

Psychologist H. Eysenck identified a set of variables that have an impact on creativity. These are cognitive variables (intelligence, knowledge, technical skills and special talent), environmental variables (political, religious, cultural, socioeconomic and educational factors) and personality variables (internal motivation, trust, discrepancy and creative thinking skills) (Eysenck, 1996).

The results of S. Shane's and N. Nicolaou's study *Creative Personality, Opportunity Recognition and the Tendency to Start Businesses* confirmed that people with a creative personality have a significantly greater tendency to recognise business opportunities and start a business than the others. It was found that genetics have a significant effect on creativity. Genetic factors account for 66% of the correlation between the creative personality and opportunity recognition, and 82% – of the correlation between the creative personality and the tendency to start a business. Because of the high correlation between creativity and opportunity recognition, employers could consider using a creative personality test to identify employees to be engaged in the jobs where opportunity recognition is important (Shane and Nicolaou, 2015). Further evidence suggests that creativity and entrepreneurship are interconnected. For instance, D. Hull, J. Bosley and G. Udell surveyed university graduates and found that in terms of creativity the business owners were valued higher than non-owners. But it should be borne in mind that creative personality can be developed in life, and the development of a creative personality increases the likelihood that people will become entrepreneurs which could be the result of both genetic and environmental influences (Hull, Bosley and Udell, 1980).

G. Hearn, S. Cunningham and D. Ordonez suggested that a strong intellectual property protection mechanism, creation of vibrant creative talent groups, a broad platform for information exchange and a perfect risk investment system are important factors for the development of creative industries (Hearn, Cunningham and Ordonez, 2004). A creative product is a very special product that can be easily copied by other people. Intellectual property rights are the granting of legal and exclusive rights to the original creator according to which he or she owns and

controls the intellectual product (Dong, Zhu and Hu, 2015). Intellectual property protection reduces the possibilities for copying the creative result and is one of the means to protect the repayment of the invested funds; it can stimulate the creation of innovations which is a positive driver for industrial development. Here it should be mentioned that according to the research *The Functioning of Latvian Creative Industries and Preconditions for Targeted Development of the Industry* conducted by Baltijas Konsultācijas LLC and Konsorts LLC, Latvian small and medium-sized enterprises rarely use the opportunities to strengthen their intellectual property. This is due to the lack of resources, interest and knowledge, as well as the complicated procedures (Baltijas Konsultācijas LLC and Konsorts LLC, 2013). This could hinder the development of creative industries.

Another factor influencing creativity that is specifically topical nowadays is the impact of information and communication technology (ICT) the use of which is one of the main sources of competitive advantage for businesses. Due to ICT, there are important changes in creative industries both in terms of demand and supply. Even though the same trends can be observed in other areas of digital content, changes in the business models of creative industries are specific because they relate to efficiency in combination with different resources involved in the process of creation, for instance, skills, talent and technology. The development of new technologies and online market has contributed to the new service opportunities, market expansion and globalisation, new offers and new relationships with customers (social media, recommendations and comments). The creators of creative products can collaborate in geographically dispersed groups, as well as there is interaction between the creators, content providers and potential users. Content development is the result of joint efforts by various operators, professionals and amateurs which enables them to share and distribute the costs of initial design, publishing and distribution between the parties. Moreover, greater communication between consumers and creators makes the content more tailored to user needs, which reduces uncertainty and promotes development (Lyubareva, Benghozi and Fidele, 2014). But, on the other hand, ICT enables others to copy and transfer the creative content at a very low cost. It has a significant impact on publication, promotion and dissemination. When the marginal cost becomes low and almost insignificant, it provides significant advantages to the copiers. Even if such changes offer great opportunities from the point of view of the consumer, they pose a threat to creative industries. Therefore, researchers E. Moyon and K. Lecocq concluded that the development of creative industries requires innovation in two key areas. Firstly, legal bodies must develop new structures to maintain intellectual property rights. Secondly, organisations working in creative industries need to rethink their business models in order to remain profitable and competitive in a changing environment (Moyon and Lecocq, 2014).

The national culture also influences the economic creativity. It has been proved that an individual from a stringent culture engages and succeeds in foreign creative tasks that are culturally far away less than a person from an open culture. On the contrary, for the pursuit of local creative tasks, cultural tensions increase participation and the possibility of success. These findings demonstrate the impact of cultural standards on creativity on a global scale. It is more likely that people from a stringent culture will engage and succeed in culturally similar foreign creative tasks. For people from a stringent culture, when foreign standards are very similar, there is an understanding of their local rules giving them an advantage in creativity. But the tighter the specific culture is, the harder it is to do creative work successfully because of the difficulty of meeting the cultural standards. This finding suggests that stringent cultures are difficult to satisfy by the foreign inventors. Also, innovators from a tight culture appear less frequently than from the loose cultures and are less likely to use the ideas of foreign culture. And, in general, cultural tension is a threat to creativity (Chua, Roth and Lemoine, 2015). In addition, the evidence that a stringent culture can hinder an individual's ability to generate innovative ideas is in line with R. Florida's assertion that tolerant cultures are an important predictor of urban creativity.

Creativity studies have so far highlighted the importance of divergent thinking, whereas scientists also argue that convergent thinking plays a critical role. J. Goncalo and M. Duguid found that creative success is facilitated by the compliance rules of a team whose members are not particularly creative (Goncalo and Duguid, 2012). Coordinated thinking helps evaluate the practicality of an innovative idea and implement it. Divergent thinking has a great power in the generation of innovative ideas, whereas coordinated thinking needs to find out whether these ideas could be useful in the context of the given problems.

The main factors influencing the creative industries are summarised in the Table 1.

Table 1

Summary of the Main Factors Influencing the Creative Industries

| Author(s) | Factors |
|---|--|
| E. Martinaitytė, R. Kregždaitė (2015) | People's level of creativity, expenditure for culture and recreation, government expenditure for culture, number of patents per million inhabitants, employment rate in research and development, number of students applying for arts and humanities, tolerance level |
| R. Sternberg (2006) | Intellectual skills, knowledge, motivation, personality, thinking style (use of these factors and training), environment |
| R. Florida (2002) | Creative talent, creative technology, city's cultural tolerance |
| J. Zhou, C. Shalley (2009); G. Oldham, A. Cummings (1996) | Personal qualities, contextual parameters or situation |

| Author(s) | Factors |
|---|--|
| T. Amabile (1988) | Organisational motivation for innovation (including: availability of resources, time for ideas, training, compliance with freedoms and challenges, management support for the building of a creative work climate) |
| M. Jensen, S. Beckmann (2009) | Social relationships (support for ideas, dynamism, debates, risk taking and idea) |
| H. Eysenck (1996) | Cognitive variables (intelligence, knowledge, technical skills and special talent), environmental variables (political, religious, cultural, socioeconomic and educational factors) and personality variables (internal motivation, trust, discrepancy and creative thinking skills) |
| S. Shane, N. Nicolaou (2015) | Genetic factors or creative personality |
| G. Hearn, S. Cunningham, D. Ordonez (2004) | Intellectual property protection mechanism, creation of energetic creative talent groups, wide platform for information exchange |
| I. Lyubareva, P. Benghozi, T. Fidele (2014) | Information and communication technology |
| R. Chua, J. Roth, J. Lemoine (2015) | National culture, its openness, stringency |
| J. Goncalo, M. Duguid (2012) | Divergent and convergent thinking |

Source: authors' construction based on literature review

In general, it may be concluded that creativity is influenced by the environment, situation and genetics, and it can be developed during a lifetime.

RESEARCH METHODOLOGY

To determine the attitude of creative industry representatives towards creativity and its significance, as well as to assess company practices in the development of creativity in the Latvian creative industries, an empirical study was conducted. The individual questionnaire was disseminated electronically via the homepage *visidati.lv*. The link to it was emailed to 1093 representatives of creative industry companies. It was available both in Latvian and Russian. As a result, out of all emailed questionnaires 12.4% or 136 filled out questionnaires were received. After processing, the total results of the survey were obtained with the proportion of the responses of each statement and the different response rates: mean, median, mode, Pearson correlation coefficient.

In the questionnaire, the respondents had to choose the right option for their company, i.e. the type of activity, duration, turnover and turnover growth over the last three years. The respondents had to assess the extent to which

the respondents agreed with each of the statements about creativity and the factors influencing a creative company. These questions were asked to identify the respondents' attitude towards creativity, the creative environment and the creativity facilitation practices used. They made it possible to compare the company representatives' points of view and practices in companies. Questions related to the assessment of innovation and creativity in a company were asked in order to determine whether companies stimulate creativity and, as a result, the source of innovation as a competitive advantage and the possibility of increased efficiency.

The representatives from different creative industries participated in the survey (Table 2). The majority or 29.4% represented the design, photographic and translation services sectors. 15.4% of the companies were related to the activities of art and cultural institutions, 13.2% – to crafts, 12.5% – to architecture.

Table 2

Lines of Business of Respondent Companies

| No. | Questionnaire participant's industry | Percentage of analysable totality |
|-----|--|-----------------------------------|
| 1 | Design, photographic services, translation and interpreting sector | 29.4% |
| 2 | Art and culture institutions | 15.4% |
| 3 | Artisanship | 13.2% |
| 4 | Architecture | 12.5% |
| 5 | Film, television, music, radio | 8.1 % |
| 6 | Computer programming and computer services sector | 7.4% |
| 7 | Other creative industries | 13.9 % |

Source: authors' construction based on the research results

At the time of completing the questionnaire, the duration of activity of the majority of respondents (48.5% or 66 representatives) was more than seven years. The duration of activity of 32 respondents was 4–7 years, of 31 respondents – 1–3 years, and of 7 respondents – up to 1 year. The turnover of the investigated companies was very diverse. 14.4% of the surveyed companies were very small with the turnover up to EUR 5 thousand per year. In these companies, the owner or merchant is most often also the sole employee. The turnover of 16.7% companies was over EUR 500 thousand per year.

In the following questions the creative industry representatives were asked to assess the extent to which the respondents agreed with each of the statements about their attitude to creativity and creativity stimulating practices in their companies at the scale from 1 to 5 (*where 1 – completely disagree and 5 – fully agree*). The detailed results of each question are summarised in Table 3.

Table 3

Questionnaire Statement Results

| No. | Statement | Mean | Median | Mode | 1 | 2 | 3 | 4 | 5 | Not sure |
|-----|--|------|--------|------|----|----|----|----|----|----------|
| 1 | It is important to develop the individual creativity of the company's employees | 4.45 | 5 | 5 | 1 | 2 | 18 | 27 | 85 | 3 |
| 2 | It is impossible to teach and develop creativity | 3.11 | 3 | 3 | 18 | 26 | 37 | 22 | 27 | 6 |
| 3 | It is important to coordinate and control the employee's creative process | 3.52 | 4 | 4 | 9 | 18 | 28 | 38 | 31 | 12 |
| 4 | Latvia has an open and tolerant culture | 3.08 | 3 | 3 | 8 | 32 | 47 | 26 | 16 | 7 |
| 5 | The offer of Latvian educational programmes in creative/your field is in line with the market requirements | 2.57 | 2 | 2 | 31 | 35 | 32 | 23 | 9 | 6 |
| 6 | The country has extensive information on your industry issues, including support options | 2.55 | 3 | 3 | 30 | 35 | 39 | 20 | 8 | 4 |
| 7 | Something new was introduced into your product/service in the last 12 months | 4.14 | 5 | 5 | 10 | 11 | 4 | 32 | 75 | 4 |
| 8 | New work practices/new equipment were introduced in your company in the last 12 months | 3.47 | 4 | 5 | 27 | 14 | 13 | 25 | 52 | 5 |
| 9 | When selecting an employee, his or her ability to be creative is also assessed | 3.96 | 4 | 5 | 6 | 7 | 24 | 34 | 51 | 14 |
| 10 | A work environment stimulating creativity and new ideas has been created in the company | 3.57 | 4 | 5 | 10 | 14 | 33 | 33 | 37 | 9 |
| 11 | A system of recommendations has been developed in the company | 2.91 | 3 | 4 | 27 | 20 | 27 | 29 | 17 | 16 |
| 12 | Employees openly share their creative ideas with others | 3.87 | 4 | 5 | 4 | 15 | 22 | 34 | 48 | 13 |

Source: authors' construction based on the research results

In general, it can be concluded that the absolute majority, i.e. 82.4% of the respondents, totally or rather agreed that it is really important to develop the individual creativity of the company's employees. The median in this question is 5. Thus, the respondents are aware that creativity is one of the main sources of advantage in their work. Despite the fact that a recent research has shown that creativity can be developed and trained, there is no common opinion among the respondents as to whether creativity can be taught. The mean value is 3.11 and the median – 3. The opinions are completely divided and contrary – 32.4% consider or rather agree that creativity can be taught, 36% – agree or rather agree that creativity cannot be taught, whereas 27.2% gave an average assessment 3 to this question. Similarly, there is no unequivocal attitude towards the statement “It is important to coordinate and control the employees’ creative process.” Nevertheless, the median and mode is 4, and the majority or 50.7% completely or rather agreed with this statement, 19.9% – rather disagreed with it, and 29.4% rated it with 3 or it was hard for them to say.

Based on the researchers’ findings, openness and tolerance of the national culture have a significant impact on the people’s creativity. The respondents’ opinions were totally divided in relation to the openness of Latvia’s culture and the level of tolerance. This is also confirmed by the mode and median score of 3, and an average of 3.08. 30.9% fully or rather agreed that there is an open and tolerant culture in Latvia, 29.4% of the respondents did not agree, and 34.6% gave the assessment 3. 48.5% of the respondents fully or rather agreed that the Latvian educational programme offer in their sectors does not meet the market requirements, only 23.5% of the respondents rather or fully agreed that the educational programme offer still meets said requirements. This poses a threat to the fact that students are not competitive after training, and their potential is not developed to the maximum since training and development are the foundation of new idea creation. Similar results are in the statement on the availability of information on creative industry issues, including support options. 47.8% of the respondents believed that this information is fully or rather not widely available and only 5.9% of the respondents fully agreed with the statement. It is positive that in the innovation survey, the majority (55.1%) of the respondents acknowledged that something new was introduced in their product or service over the last 12 months, and 23.5% of the respondents rather agreed with this statement. This means that the majority of creative companies implement product innovations. Slightly less, i.e. 56.6% of the respondents, fully or rather agreed that new work practices (or equipment) were introduced. So, the process innovation is introduced but less frequently than the product innovation. One fifth (19.9%) did not introduce any new work practice in the last 12 months. It should be pointed out that the majority indicated that when selecting a staff member, his or her ability to be creative was also assessed. 62.5% fully or rather agreed with this statement. It is positive because, due to the high correlation between the creative personality and opportunity recognition, identification of the employee’s creativity allows offering the right job to him or her, assigning employees to the work places where

business opportunity recognition is important, and developing the employee's individual development plan that promotes individual creativity development.

The company's environment facilitating creativity was assessed rather differently. 27.2% of the respondents fully agreed to the statement that their company was ensuring a work environment stimulating creativity, 24.3% of the respondents gave the assessment 4, and the same percentage of the respondents gave the assessment 3; 10.3% the respondents rather disagreed with this statement, and 7.4% – completely disagreed.

In order to understand the relationship between the questionnaire statement results and the duration of business, its turnover growth and size, the Pearson correlation coefficient between these indices was calculated. In general, research interrelations are not close, which means that there is no close correlation between the responses to the statements and the size and turnover of the companies. However, it was found that there is a weak negative interrelation between the company's operating life and introduction of product innovations over the last 12 months, i.e., the larger the company and its duration, the less it was noted that it had introduced product innovations in the last year. The correlation coefficient $R = -0.201$ where the correlation coefficient is statistically significant with the probability value $p = 0.981$ or with the significance level $\alpha = 0.019$. Similar results are also found in the correlation between the company's turnover and the introduction of product innovations. These results confirm the tendency for smaller companies to innovate. There is a positive weak correlation between the turnover increase and the introduction of product innovations. The correlation coefficient $R = 0.289$ where the correlation coefficient is statistically significant with the probability value $p = 0,999$ or with the significance level $\alpha = 0.001$. And the greater correlation is the interrelation of process innovations with the increase in turnover. The correlation coefficient $R = 0.317$ where the correlation coefficient is statistically significant with the probability value $p = 1$ or with the significance level $\alpha = 0$. Consequently, the introduction of new work practices has a greater influence on the turnover growth. It should be pointed out that there is a weak and negative correlation between the development of the system of recommendations and the company's duration. This means that there is a tendency for new companies to develop the recommendation systems. A positive relationship is also between turnover growth and open sharing of ideas. The correlation coefficient $R = 0.238$ where the correlation coefficient is statistically significant with the probability value $p = 0.995$ or with the significance level $\alpha = 0.005$.

An averagely strong positive correlation exists between the introduction of product and process innovations. The correlation coefficient $R = 0.562$, where the correlation coefficient is statistically significant with the probability value $p = 1$ or with the significance level $\alpha = 0$. Companies introducing a new product are more likely to introduce innovations in the process, and vice versa. There is also an averagely strong positive correlation between the provision of a creative working environment and the sharing of employees with creative ideas. The correlation

coefficient $R = 0.460$ where the correlation coefficient is statistically significant with the probability value $p = 1$ or with the significance level $\alpha = 0.000$.

Thus, the representatives of the Latvian creative industries are aware of the importance of implementation of creativity and innovation, and there are opportunities to improve their activities by purposefully developing the level of the employees' creativity and process innovation taking into account the factors influencing creativity. This can lead to an increase in the companies' turnover.

CONCLUSIONS

1. Creativity is a process that brings something new and useful. Creative industries stand out from the rest because their products include symbolic and aesthetic values. For consumers, the value of such products exceeds their value in use and is not directly related to the cost of production.
2. Creativity is influenced by the environment, situation and genetics, and it can be developed throughout life. Therefore, managers should ensure the environment and training programme facilitating creativity in the company.
3. The representatives of the Latvian creative industries understand the importance of developing of the employees' individual creativity as one of the main competitive advantages in a company.
4. Among the Latvian creative industries there is no unequivocal attitude as to whether creativity can be taught and whether it needs to be coordinated. The creative industry representatives should be aware that creativity may be developed using the creativity stimulation techniques, but it needs to be controlled to achieve more effective results.
5. Among the Latvian creative industries there is no unequivocal attitude towards the level of openness of the country's culture, which has a significant influence on the development of creativity and creative industries; the companies' creativity environment was also assessed rather differently. Entrepreneurs should especially work to build a creative work environment since it is one of the most important factors influencing new ideas, and the potential to create creative production is greater in the climate facilitating creativity.
6. Almost half of the respondents believe that the offer of Latvian educational programmes in their sectors does not meet the requirements of the market. A great deal of attention should be paid to education in creative industries since it is the basis for the facilitation of creativity.
7. It is positive that the Latvian creative companies introduced both product and process innovations over the last 12 months. But process innovation is introduced less often than product innovation. This is due to the fact that entrepreneurs focus more on the finished product. The creative industry entrepreneurs should also focus on the improvement of the process since the introduction of new work practices has a greater influence on turnover

- growth than the introduction of new products. Companies introducing a new product are more likely to introduce innovations in the process, and vice versa.
8. Smaller companies are more likely to innovate. The company's open culture in which the exchange of information is facilitated is related to turnover growth.
 9. The company's creative environment has a positive impact on the sharing of ideas among employees which, in the long run, gives the possibility to develop innovations.

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IMPACT OF TECHNOPRENEURSHIP ON BUSINESS PERFORMANCE

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Abstract

Technopreneurship has become a lever to propel creativity and innovation in businesses today. This study investigates the impact of technopreneurship on business performance among agro-businesses in Abeokuta, Ogun State, Nigeria. The study examined empirical evidences on the impact of technopreneurship on business performance. The survey method was adopted. The quantitative research design was employed. Yamane formula was used to determine the sample size. A sample of 126 respondents was selected through random sampling method from a population of 183 agro-businesses within the study areas and 74% response rate was recorded. Primary method of data collection was used. A well-structured questionnaire was administered and responses were analysed using linear regression on SPSS (Statistical Package for Social Sciences) version 20. The survey demonstrates that technological innovation has significant effect on firm competitiveness ($P = 0.000 < 0.05$; $R^2 = 0.183$) and also technological opportunities significantly influence on firm operational efficiency ($P = 0.000 < 0.05$; $R^2 = 0.445$). Based on the results of findings, the study recommends that businesses need to develop or exploit indigenous technology; new products or processes based innovations; seek new technology ideas and significant technological changes which are key to competitiveness.

Keywords: Nigeria, Technology, Innovation, Technological Opportunities, Business performance

JEL Code: M53, M1

INTRODUCTION

Technopreneurship has become a lever to propel creativity and sustain long-run competitive advantage in the present world where economic issues have combined with increased competitiveness (Merek, 2016). Subsequently, this need to combine the need and requirement for technology with all elements of entrepreneurship led to the development of the term “Technopreneurship” which refers to new or prospective business enterprises that is anchored on technology (Petti, 2009; Ozgulbas et al., 2013). To accomplish business performance objectives, the concept of technological entrepreneurship conceived as a process involving greater practical use of scientific research findings and

modern technologies plays a crucial role. All the activities of this phenomenon relate to “the identification of potential entrepreneurial opportunities arising from technological developments, and the exploitation of these opportunities through the successful commercialization of innovative products” (Petti, 2012; Okorie et al., 2014; Aderemi et al., 2012). The technological creativity can be understood by first appreciating the wider meaning of creativity. However, this is a challenging quest considering the complex and multi-faceted nature of the creativity concept, which makes it difficult to define (Blanco, 2007; Al-Alsari, 2014; Fowosire, Idris & Opoola, 2017). This difficulty is intensified by the domain spanning nature of creativity of technopreneurship, which leads to the existence of various types of creativity. These types include artistic creativity, entrepreneurial creativity, scientific creativity, cultural creativity and technological creativity.

As such, research on the concept has brought diverse characterisations of the notion. Typically, the concept of Technopreneurship creativity is explained from three main perspectives, which are personality traits (a human quality associated with convergent and divergent thinking), processes involved (the stages that one undergoes to produce a novelty) and the product/output of creativity (Dawit, 2005; Atalay, 2013; Cheng et al., 2006). This study focuses on Technopreneurship creativity as a human and social attribute that makes individuals and society adjust to the mutable environment, reformulate life-challenges, and take risks to try new approaches to problems and how it affects business performance. The connection between Technopreneurship and business performance is emphasised in the contemporary economic environment (Maria et al., 2007; Kuratko; 2009; Petti & Zhang, 2011). Some scholars even suggest that the process of technopreneurship is a creative act (Morris et al., 2008; Renko et al., 2009; Espallardo & Ballester, 2009; Alvarez & Barney, 2007; Davis, 2006). Thus, it is pertinent to come up with characterisations of creativity that relate technopreneurship.

Antoncic and Prodon (2008) explains Technopreneurship creativity as “creating something new, for example, creating a new business by developing a new product or service, building an organisation by financial manipulation, reshaping an existing business, creating a business that will exist on its own, and a financial fortune as testimony to the technopreneur’s skill in related to technology”. This view, therefore, cements an often expressed view that technopreneurship is a creative act. Having clarified the general application of the creativity concept, the focus now narrows to technopreneurial creativity. Dutse et al. (2013) posit that the notion of technological creativity is prominent in literature on education even though its application is still in the fledgling stages. Common definitions of technopreneurs creativity follow Rozana & Abdul hakim (2005) belief that psychologists consider the creativity concept from two perspectives; either as a human trait or as an achievement. This explains the common usage of personality and output scales as measures of one’s creativity. Norwatim (2011) refer to the preceding as definition by inclination or capability factors.

The following are, therefore, some of the proposed definitions of technopreneurship that follow the prior-stated criteria. Like Rauch et al. (2003) definition underscores the invention aspect of technological creativity, thus linking the concept with the design, development and commercialisation of new products. In addition, the characterisation also emphasises the problem solving nature of technological creativity.

LITERATURE FRAMEWORK – CONCEPTUAL REVIEW

TECHNOPRENEURSHIP AND TECHNOLOGICAL CREATIVITY

Research on the technological creativity construct in the technopreneurship realm is still in its embryonic stage. This is despite the long proposed link between general creativity and technopreneurship (Mengistae, 2006; Kaur, 2006). Scholars claim that a technopreneurship process is an interactive act of creativity which takes place within diverse circumstances in related to technology (Kemp et al., 2003; Olatunji, 2015; Baileti, 2012). Thus the technopreneurs' engagement in technopreneurship creates value by producing novelties, initiating and navigating change. Roos & Roos (1997) asserts that through creative destruction, technopreneurs discard irrelevant products and services and replaced them with new and market-related ones with new technology. In the same vein, they creatively combine resources to make a constant stream of innovations that match market opportunities (Penrose, 1959). Thus, technopreneurs need to possess skills that include creativity, innovation and opportunity recognition ability. In addition, Lumpkin & Dess (2001) theorize that the technopreneurship process rests on innovation, risk-taking and pro-activeness of technological processes. This view is particularly valid in the case of technology opportunity-driven technopreneurship which relies on the technopreneurs identifying and mobilising resources to pursue previously unexplored business opportunities.

Contemporary scholars also suggest a close link between technopreneurship and creativity in modern economies (Laidlaw, 1978; Kuswanto, 2012; Okorie et al., 2014; Medina & Rufin, 2009; Morone & Testa, 2008). Aderemi et al. (2011) also view the two variables as mutual and inseparable. One of the key qualities of an entrepreneur is the ability to use divergent and convergent thinking to generate ideas, products and services that match existing market requirements or create new market opportunities (Barney, 1991; Grimaldi, Kenny & Wright, 2011). Atuahene, Gima & Ko (2001) proclaim that creativity enhances the relationship between entrepreneurship and economic vibrancy. Poznaka (2010) study covering 31 metropolitan informational cities from USA, Europe and Asia reveals significant correlations between creativity and technopreneurship activity. The results arising from the study's consideration of the two indicators of technopreneurship activity, the number of new businesses created and rate of self-employment, suggested that any perceived positive impact of creativity on

economic performance stemmed from the influence of technological creativity and innovation. However, the outcome of the study did not declare an ever present positive relationship between creativity and technopreneurship in the cities. These conclusions somewhat neutralise suggestions by Lumpkin & Dess (1996) and Quince & Whittaker (2003) that individual creativity levels and the creative environment enhanced creative output. Further observations from the same study note that the correlation between creativity and technopreneurship varied by region and yielded mixed results.

CONCEPT OF BUSINESS PERFORMANCE AND TECHNOLOGY OPPORTUNITIES

Performance can be attributed as the main indicator in assessing the operation of an organisation. Many studies in the field of management have looked into the issue of performance especially in the context of strategic management (Alfred, 1989). Measuring performance is important as it provides a benchmark for examining particular strategies implemented in the organization (Anad, Mesquita & Vassolo, 2009). According to Rozana and Abdul Hakim (2005), the assessment of performance is beneficial in upgrading and improving a firm's existing programme and policy. However, there exists a dilemma for the cooperative firm on whether they should focus on the financial aspect or the social welfare of the members (Davis, 2006; Mayo, 2011). This differs to the situation in the private sector where there is emphasis on the social welfare of the members due to the members' status as owners and also consumers of the firm's service and products (Alfred, 1989). Nonetheless, it is vital for the cooperative to focus on its financial performance first in order to ensure its survival (Kaur, 2006) and only then proceed to fulfil its social responsibility to its members (Laidlaw, 1978). On the other hand, some previous studies have discovered a few weaknesses in the business performance of the cooperative sector, especially concerning income earnings (Dawit, 2005; Kaur, 2006; Norwatim, 2011).

In an empirical study, Kaur (2006) found that there exists a big gap in the financial performance of small and large cooperatives in Malaysia. As such, smaller cooperatives have been advised to focus on improving their business performance. In order to generate a positive business performance, the cooperative firm must be able to provide better service for its members compared to the service provided by businesses in the private sector (Bayus, Erickson & Jacobson, 2003). Aderemi et al. (2011) identified two major features of technopreneurship to be high potential opportunity and technology-intensive opportunity. In a study conducted by Alvarez & Barney (2007), they posit that the obvious ability and willingness of entrepreneurs (who anchor their business thrust on technology) to practically perceive and create new business opportunities and decide to venture in to such opportunities in spite of market uncertainties and other challenges, affect business activities, not only within their business units and industries, but also within the economy they are situated.

TECHNOLOGICAL INNOVATIVENESS AND BUSINESS PERFORMANCE

Technological Innovativeness could be considered a threat to the existing business practices and technology (Atuahene-Gima & Ko, 2001). An innovative practice can be in the form of a research or engineering venture geared towards creating new technology, products or processes (Renko, Carsrud & Brannback, 2009). Innovation could also be introduced via a new marketing strategy for an existing product (Lumpkin & Dess, 1996), a new promotional and advertising strategy (Avlonitis & Gounaris, 2008) or a new leadership practices (Chen, Tjosvold & Liu, 2006). As such, all innovative processes conducted would enable the creation of new customers and new markets for the firm (Kuratko, 2009). Through the process of ongoing innovation, the reform or upgrade would be able to provide a unique quality to the firm. This would enable the firm to be at the Forefront compared to its competitors (Quince & Whittaker, 2003).

Hence, the distinctive quality from the innovative process would ensure better business performance following the firm's ability to attract new customers. The act of seizing new opportunities enables the firm to glean more benefits compared to its competitors (Anand, Mesquita & Vassolo, 2009). Furthermore, the firm should be able to predict any changes in the market or any problems which may arise (Rauch, Wiklund, Lumpkin & Frese, 2003). This could be fulfilled by monitoring trends or identifying future needs for the firm's existing customers. Previous studies have drawn on the connection between proactiveness and the firm's innovative outlook. Based on the firm's proactive outlook, via the prediction of customer and market needs, this reform is targeted towards bringing changes to the products, service, technology and management techniques (Maria, Martina & Luz, 2007).

BARRIERS TO TECHNOPRENEURSHIP

It is presented in the evidence that technological innovation is an imperative internationalisation driver at the level of the firm and barriers to technopreneurship consequently proceed also as internationalisation barriers

LACK OF KNOWLEDGE FOR AVAILABLE TECHNOLOGIES

The barriers of knowledge for innovation relate to the lack of knowledge of available technologies, knowledge sources and markets and past research has confirmed the presence of considerable barriers to innovation related to knowledge of technologies and markets, accessing finance and the deficiency of skilled labour. Econometric analysis results revealed that firms that are not a division of a big business group or SMEs are more likely to experience barriers of knowledge (Kemp et al., 2003). The main cause of this barrier is that a large organisation or allied grouping has an advantage of size and they can increase fixed costs related to activities of knowledge sourcing or measures management

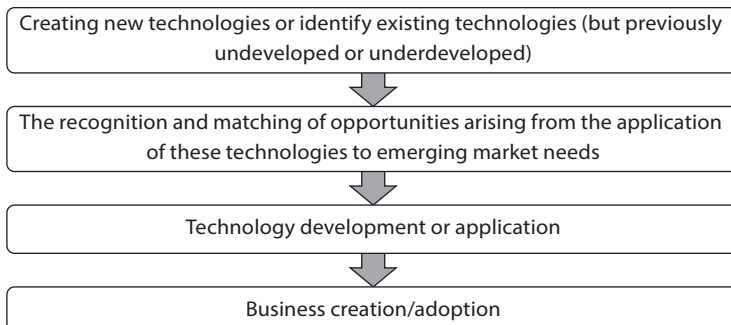
of internal knowledge for an outsized output. Therefore, Technopreneurship have a drawback that they mostly do not have enough money to discover information about technologies and markets in a systematic way. Consequently, the outcome of the result shows that firms are already internationalised in a systematic way and they report experience of more barriers of knowledge to innovation (Ozgulbas, Koyuncugil & Yilmaz, 2006).

FINANCIAL BARRIERS FOR THE FIRMS

One more barrier that restrains the activity of Technopreneurship is considered as financial barriers towards innovation for the firms. Past studies have revealed that financial barriers have an advanced impact on innovation for young firms, as well as SMEs (Medina & Rufin, 2009; Kraaijenbrink, Spender & Groen, 2010). The huge organisations or companies which are division of a business groups are less likely to experience these issues and because of their size it is not difficult to set up collateral funds inside the groups. Barriers related to finance are mainly vital for Technopreneurship with narrative technologies and products (Espallardo & Ballester, 2009). It was shown in the past research that firms which are less concentrated are furthermore expected to experience financial barriers. It is shown in the results that this accounts for firms that are dependent greatly on superior knowledge, for example, universities or research institutes. However, it is important to consider IPR in this regard because SMEs can show a few forms of IPR for the effect of their innovation actions which are less likely to be affected by financial constraints (Bayus, Erickson & Jacobson, 2003; Moris et al., 2008).

CONCEPTUAL MODEL OF STUDY

According to Petti (2009), the concept of technological entrepreneurship incorporates four main sets of activities relating to processes illustrated in the diagram below:



Source: Petti, C. (Ed.) (2009). *Cases in technological entrepreneurship: Converting ideas into value*.

Fig. 1. **Technology entrepreneurship set of related activities**

RESEARCH METHOD

The research study adopted a survey research design. It was carried out as an empirical study that assesses the impact of technopreneurship on business performance. The scope of the study covers Abeokuta, Ogun State, Nigeria. The respondents who are owners of agro-businesses within farm settlements in the areas were purposively randomly selected in order to accomplish the objective of the study. Primary method of data collection was used to collect necessary data that was used for the analysis of this study through a field survey of agro-businesses with the aid of purposive well-structured questionnaires. The questionnaire instrument was designed using six (6) point Likert's scale, as well as through an in-depth personal interview guided by the questions raised in the questionnaire which proved to be most effective due to the fact that most respondents could not fill in their responses or due to time constraints (Michal, 2011). A sample of 126 respondents was identified from a population of 183 agro businesses within the study areas using random sampling method of Yamane (1967) based on reports of the number of agro businesses in the study area and 74% of questionnaire administered were returned. Each of the dependent and independent variables of the research construct were measured by four (4) items each validated by different authors found in extant literature. Pre-test was also conducted through a pilot study which was carried out for the research instrument's validity. Split half method of reliability test results on the split halves 0.724 and 0.813 respectively show that the research instrument is reliable (Kumar, 2010).

DATA ANALYSIS AND INTERPRETATION OF RESULTS

Linear Regression analysis was used to test the research hypotheses and analyse the dependent and independent variables. Subsequently, test of linearity, test of collinearity and test on normality using Normal Q-Q Plot was carried out to ensure the assumption of linear regression that the residuals are normally distributed is met. It is important to meet this assumption for the p-values for the t-tests to be valid.

HYPOTHESIS 1

HO₁: There is no significant relationship between technological innovation and firm's competitiveness.

HA₁: There is a significant relationship between technological innovation and firm's competitiveness.

Table 1

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .428 ^a | .183 | .174 | .43210 |

a. Predictors: (Constant), Technological Innovation

b. Dependent Variable: Competitiveness

Table 2

ANOVA Table

| | | Sum of Squares | Df | Mean Square | F | Sig. | |
|--|----------------|--------------------------|-------|-------------|-------|--------|------|
| Competitiveness * Technological Innovation | Between Groups | (Combined) | 4.407 | 8 | .551 | 2.823 | .008 |
| | | Linearity | 3.805 | 1 | 3.805 | 19.503 | .000 |
| | | Deviation from Linearity | .602 | 7 | .086 | .440 | .874 |
| | Within Groups | 16.389 | 84 | .195 | | | |
| | Total | 20.796 | 92 | | | | |

INTERPRETATION OF RESULTS

The result from the model summary Table 1 revealed that the extent to which the variance, competitiveness can be explained by technological innovation is 18.3% (R Square = 0.183).

Table 2 shows the result of the linearity assumption of linear regression test. Based on the ANOVA Output Table 2, value of significance for Deviation from Linearity of 0.874 > 0.05, it can be concluded that there is a linear relationship between the variables of Technological innovation with Competitiveness. It also shows the Fcal 19.503 at 0.000 significant level. The output from table shows that there is a significant relationship between competitiveness and technological innovation.

Table 3

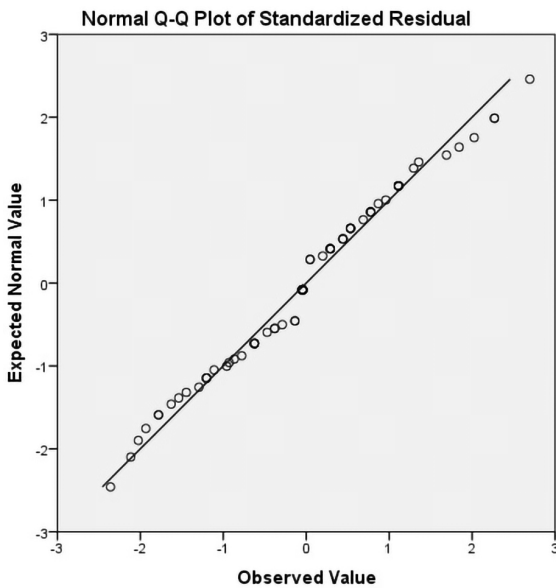
Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-------|--------------------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.732 | .673 | | 2.573 | .012 |
| | Technological Innovation | .579 | .128 | .428 | 4.514 | .000 |

a. Dependent Variable: Competitiveness

The coefficient Table 3 above shows the simple model. The model is shown mathematically as follows: $Y = a + bX$ where 'y' is competitiveness and 'x' is technological innovation, 'a' is a constant factor and 'b' is the value of coefficient.

From this table therefore, $\text{Competitiveness} = 1.732 + 0.579 \text{ Technological innovation}$. Therefore, a unit (or 100%) change in technological innovation will lead to 0.579 (57.9%) change in competitiveness. The above result implies that there is a significant relationship between technological innovation and competitiveness i.e. since the P value (0.000) is less than 0.05. Thus, the decision would be to reject null hypothesis (H_{01}) and accept alternative hypothesis (H_{A1}), i.e. there is a significant relationship between technological innovation and competitiveness among agro businesses in Abeokuta, Ogun State.



Source: Researchers Computation, 2018

Fig. 2. Plot of Technological Innovation and Competitiveness

Figure 2 shows that there is a positive and linear relationship between technological innovation and competitiveness, since the points in the Normal Q-Q plot show a tendency and cluster around a straight line. Most importantly, the assumption of normality of the distribution is met since the points on the plots cluster around the horizontal line. Hence the p-values and b-coefficient for the t-tests are said to be valid.

HYPOTHESIS 2

HO₂: There is no significant relationship between technological opportunities and operational efficiency.

HA₂: There is a significant relationship between technological opportunities and operational efficiency.

Table 4

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .667 ^a | .445 | .439 | .27741 |

a. Predictors: (Constant), Technological Opportunities

b. Dependent Variable: Operational Efficiency

Table 5

ANOVA Table

| | | Sum of Squares | Df | Mean Square | F | Sig. | |
|---|----------------|--------------------------|-------|-------------|-------|--------|------|
| Operational Efficiency * Technological Opportunities | Between Groups | (Combined) | 6.139 | 7 | .877 | 11.498 | .000 |
| | | Linearity | 5.619 | 1 | 5.619 | 73.675 | .000 |
| | | Deviation from Linearity | .520 | 6 | .087 | 1.135 | .349 |
| | Within Groups | 6.483 | 85 | .076 | | | |
| | Total | 12.622 | 92 | | | | |

INTERPRETATION OF RESULTS

The result from the model summary Table 4 revealed that the extent to which the variance, operational efficiency can be explained by technology opportunities is 44.5% (R Square = 0.445). Table 5 shows the result of the linearity assumption of linear regression test. Based on the ANOVA Output Table, value of significance for Deviation from Linearity of 0.349 > 0.05, it can be concluded that there is a linear relationship between the variables of operational efficiency and technological opportunities. The table also shows the Fcal 73.675 at 0.000 significant level. The table shows that there is a significant relationship operational efficiency and technological opportunities.

Table 6

Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-------|-----------------------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.656 | .364 | | 7.298 | .000 |
| | Technological Opportunities | .549 | .064 | .667 | 8.545 | .000 |

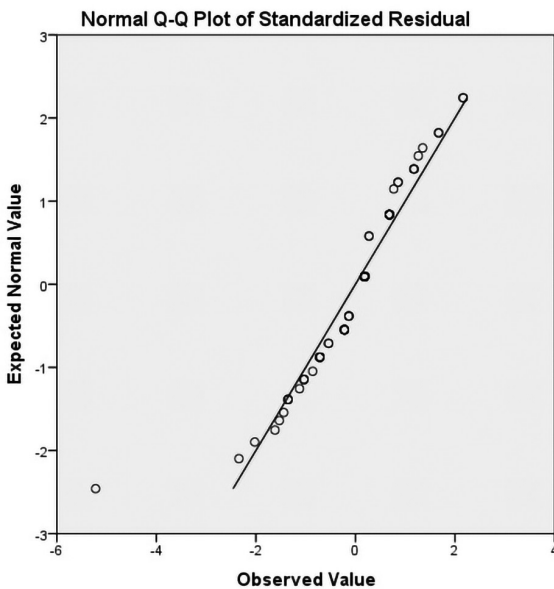
a. Dependent Variable: Operational Efficiency

The coefficient Table 6 above shows the model. The model is shown mathematically as follows:

$Y = a + bX$ where 'y' operational efficiency is and 'x' is technological opportunities, 'a' is a constant factor and 'b' is the value of coefficient. From this table therefore Operational efficiency = 2.656 + 0.549 Technological opportunities.

Therefore, a unit (or 100%) changes in technological opportunities will lead to 0.549 (54.9%) change in operational efficiency.

The above result implies that there is a significant relationship between technological opportunities and operational efficiency i.e. since our P value (0.000) is less than 0.05. Thus, the decision would be to reject null hypothesis (H_{02}) and accept alternative hypothesis (H_{A2}), i.e. there is a significant relationship between technological opportunities and operational efficiency among agro-businesses in Abeokuta, Ogun State.



Source: Researchers Computation, 2018

Fig. 3. Plot of Technological opportunities and operational efficiency

Figure 3 shows that there is a positive and linear relationship between technological opportunities and operational efficiency, since the points in the Normal Q-Q plot show a tendency and cluster around a straight line. Most importantly, the assumption of normality of the distribution is met since the points on the plots cluster around the horizontal line. Hence the p-values and b-coefficient for the t-tests are said to be valid.

TEST OF MULTICOLLINEARITY

Test of Multicollinearity is a test for whether one's predictor variables are highly correlated with each other. Tabachnick & Fidell (2001), suggest that "think carefully before including two variables with a bivariate correlation of 0.7 or more in the same analysis. The primary concern is that as the degree of

multicollinearity increases, the coefficient estimates become unstable and the standard errors for the coefficients can get wildly inflated.

Table 7

Coefficients Correlations

| | | Technological Innovation | Technological Opportunities |
|-----------------------------|---------------------|--------------------------|-----------------------------|
| Technological Innovation | Pearson Correlation | 1 | .328** |
| | Sig. (2-tailed) | | .001 |
| | N | 93 | 93 |
| Technological Opportunities | Pearson Correlation | .328** | 1 |
| | Sig. (2-tailed) | .001 | |
| | N | 93 | 93 |

** Correlation is significant at the 0.01 level (2-tailed).

From Table 7 above it can concluded that variables are not highly correlated with each other (i.e. at 0.7 or more) in the same analysis.

DISCUSSION OF FINDINGS

This study empirically investigates the impact of technopreneurship on business performance of agro-businesses in Abeokuta, Ogun State. It provided evidence on how technological innovations and technological opportunities affects and influence a firm's competitiveness and operational efficiency specifically agro-businesses, Abeokuta, Ogun State.

The two hypotheses formulated for the study were significant; thus the null hypotheses (HO) were rejected while alternative hypotheses (HA) were accepted. The study revealed that there is a significant, positive and linear relationship between technological innovation and competitiveness among agro-businesses in Ogun State ($R^2 = 0.183$, $P = 0.000 < 0.05$ and deviation from linearity $0.874 > 0.05$). This finding is consistent with previous studies Fowosire, Idris & Opoola (2017), Atalay (2013); Kuswanto (2012); Petti (2012).

This outcome of the study is explained on the grounds that new agro products, processes and significant technological changes; developing and exploiting new or improved technologies; and commercialisation of technological ideas help to create value to customers and overtime remains one of the key determinants of competitiveness. The outcome of this study shows that technological opportunities significantly influence firms' operational efficiency.

The results from hypothesis tested proves that the relationship between technological opportunities and operational efficiency is strong, significant, linear and positive ($P = 0.000 < 0.05$, $R^2 = 0.445$ and deviation from linearity $0.349 > 0.05$). The outcome is in consonance with previous studies Alvarez & Barney (2007), Petti (2009), and Blanco (2007). The rapid evolution in technology

(like high potential technologies like internet, modern energy resources and biotechnology), as well as utilising technology intensive opportunities has a significant influence on the output gained from business activities in terms of speed & agility, productivity, process cost, efficiency, quality, and so on. In general, findings show that technological opportunities have the strongest effect on operational efficiency as a measure of business performance.

CONCLUSION

This study examines the impact, role, relationship and influence of technopreneurship on performance of agro-businesses in, Abeokuta, Ogun State. The concept of technopreneurship constitutes an interesting proposition for businesses that are willing to increase their level of innovativeness for better performances through internal capabilities, competencies and resources, as well as favourable external factors, such as technological innovations and technological opportunities. The results revealed that technological innovation and technological opportunities significantly affects and competitiveness and operational efficiency respectively. The relationship involved the innovativeness and proactiveness outlook practiced by the firms which had affected to the higher business performance.

RECOMMENDATIONS

This study provides recommendations based on the conclusions and findings explained earlier.

1. First, businesses need to develop indigenous technology; new products or processes based innovations; seek, commercialise or exploit new technology ideas to meet market needs, customer expectations/preferences and consumer demands, identify market opportunities as well as respond to significant technological changes that affect their business activities. Most importantly, these practices overtime assist them to outperform competitors, achieve growth in sales, raise their competitive position and market competitive landscape.
2. Second, businesses need to identify and exploit the opportunities that emanate from recognition, application, vitality of new science and technologies, as well as the rapid evolution of technology to improve on output gained from their business activities in terms of productivity, speed & agility, efficiency, quality, and so on.
3. Finally, technopreneurship should be a central concern for government and policymakers; technopreneurial development programs need be launched to sharpen business skills and market discernment, as well as boost business and economic growth. Businesses significantly need to develop indigenous technology and commercialize technological ideas.

LIMITATIONS AND SUGGESTION FOR FURTHER STUDIES

The study limitations and recommendations that are deduced from the findings suggest more avenues for future research. This study places emphasis on the impact of technological innovation and technological opportunities on business performance, but does not explain the impact of research and development and Innovation, as well as Intellectual property rights (Patenting culture) both of which are germane in technopreneurship discourse on performance of businesses. Another limitation is the use of questionnaire and a cross sectional study approach. A number of creative methods (in-depth interviews, case study and so on) and use of a longitudinal study could be used in the future for research purposes. Lastly, future research studies on technopreneurship should investigate more large firms and manufacturing industry firms and the endogenous and exogenous factors that directly affect firms' attitude toward innovation and technopreneurship.

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ECONOMIC ACTIVITY IN CONTEXT OF REGIONS, EDUCATION LEVEL, AGE GROUP AND GENDER: CASE OF LATVIA¹

BIRUTA SLOKA
KATE ČIPĀNE

Abstract

In the National Development Plan of Latvia 2014–2020 it is written that society is aware that social, regional and opportunity inequalities can be reduced by a high overall employment rate in which everyone seeks for productivity. High employment rate is important not only for decreasing inequalities in country, but also for promoting economic growth. There have always been employment challenges in Latvia that are complex and insufficiently researched in academic research. The aim of the study is to analyse economic activity in Latvia by regions, education level, age group and gender. Research methods used in preparation of the article: scientific publication and previous conducted research results analysis, analysis of Labour Force Survey results (in 2014–2017) which are compared with the results of other European Union and OECD countries. Survey results are analysed using indicators of descriptive statistics (indicators of central tendency or location – arithmetic mean, mode, median), indicators of variability (indicators of dispersion – range, standard deviation and standard error of mean), cross-tabulations by regions in Latvia, by level of education, by age group, by gender and analysis of variance – ANOVA are used. The results of analysis indicated that the highest unemployment rate is in Latgale region and the higher the level of education, the less likely it is to be unemployed in Latvia.

Keywords: Latvia, economic activity, employment, employees, labour force, regional development, unemployment

JEL code: J24; M59; R51

INTRODUCTION

The analysis of economic activity and employment is essential for a country and it is also an important question whether employment is growing or decreasing. According to the National Development Plan of Latvia 2014–2020 society is aware that social, regional and opportunity inequalities can be reduced by high overall employment rate in which everyone seeks for productivity (NDPL 2014–

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2020). Taking into account all mentioned before, the purpose of the study is to analyse economic activity in Latvia by regions, education level, age group, gender and household composition.

The tasks of the study:

- 1) to analyse theoretical background of economic activity in context of regional development, level of education, age group, gender and household composition;
- 2) to analyse existing research of economic activity in the regions in EU; and
- 3) to analyse problems of economic activity by regions of Latvia, by level of education, by age group, by gender, by household composition.

Research methods used in preparation of the paper: scientific publication and previous conducted research results analysis, analysis of Labour Force Survey results (in 2014–2017) which are compared with the results of other European Union and OECD countries. Survey results are analysed using indicators of descriptive statistics (indicators of central tendency or location – arithmetic mean, mode, median), indicators of variability (indicators of dispersion – range, standard deviation and standard error of mean), cross-tabulations by regions in Latvia, by level of education, by age group, by gender and analysis of variance – ANOVA are used.

EMPLOYMENT DIFFERENCES IN LATVIA: THEORETICAL FRAMEWORK

Business and economic theory both hypothesise that employment is crucial for successful development of the country, this is also proven by OECD, Eurostat and other institutions that collect data about the most important measures of the country. Often differences in employment occurs in certain regions of the country or age-groups, level of education or gender. Researchers from Switzerland (Muresan, et al., 2019) have indicated key factors for sustainable rural development and economic activity in the region involving as much as possible inhabitants.

Gender differences in employment and work results are on research agenda for many researchers world-wide including aspects of professional growth (Wang, Long, 2019) Gender differences in employment have been researched in Nepal and the study revealed that despite the level of education females from rural areas have fewer opportunities to find regular work and they face significant wage discrimination than males and females from urban areas (Yamamoto, et al., 2019). Forsyth and his colleagues (Forsyth, et al., 2019) were researching opportunities and barriers for females that study and are employed in sport and revealed that there is gender discrimination in sport, however self-confidence and self-belief could be important factor for success.

One of the main aspects for female employment is education and study based on women surveyed in 139 countries (Bussemakers, et al., 2017) indicated that

women employment in countries with conservative gender norms is lower than in liberal countries. Research about vocational education and employment (Forster, Bol, 2018) revealed that benefits young people receive after having vocational education disappear later in the career and decrease employability.

Some studies have revealed that there are differences between in employment by age groups, for example, Wandner and his colleagues (Wandner, et al., 2018) have indicated that there are serious problems for older workers to be employed in the U.S., because the public workforce system is not adapted to serve older workers as they need more in-person, one-on-one services including consulting and placement services. In developed countries it is paid a lot of attention of involvement of elderly in several social activities and to those aspects are devoted many researches (Cho, Kim, 2019) including also subjective aspects.

Employment has been researched also in other aspects, for example, minimum wage in Germany was introduced in 2015. And Holtemöller and Pohle have indicated that there is robust negative effect of minimum wage on a marginal employment and robust positive effect on regular employment, and low-wage employees who are still employed are better off at the expense of those who have lost their jobs due to the minimum wage. Researchers (Holtemöller, Pohle, 2019) also have pointed out that this case is an example which shows that regional differences are very important and should be considered in the implementation process of new minimum wage regulations.

Study in US (Dogru, et al., 2020) was researching how sharing economy company Airbnb affect employment in the tourism, hospitality and leisure industries and revealed that employment in the hotel sector increases with increased Airbnb listings although prior studies showed that Airbnb has negative effect on hotels' financial performance measures.

Several studies have been devoted to researching relationship between employment and health related issues. Research results in China (Zhu, et al., 2019) have indicated that there is an evidence that economic activity – such as foreign trade, economic growth and industrial structure increase smog concentration in China. Another study in 16 European Union countries (Niedzwiedz, et al., 2019) was exploring regional employment and individual worklessness and the health of the working-age population and revealed that higher levels of employment in the regional labour market may be beneficial for the health of the local population. But unemployment has been associated with chronic stress what can cause health problems. Researcher Sumner and his colleagues (Sumner, et al., 2019) revealed that unemployment really is associated with increases in one marker of peripheral inflammation, but this health protection is not conferred to those in precarious employment.

EMPIRICAL RESEARCH RESULTS

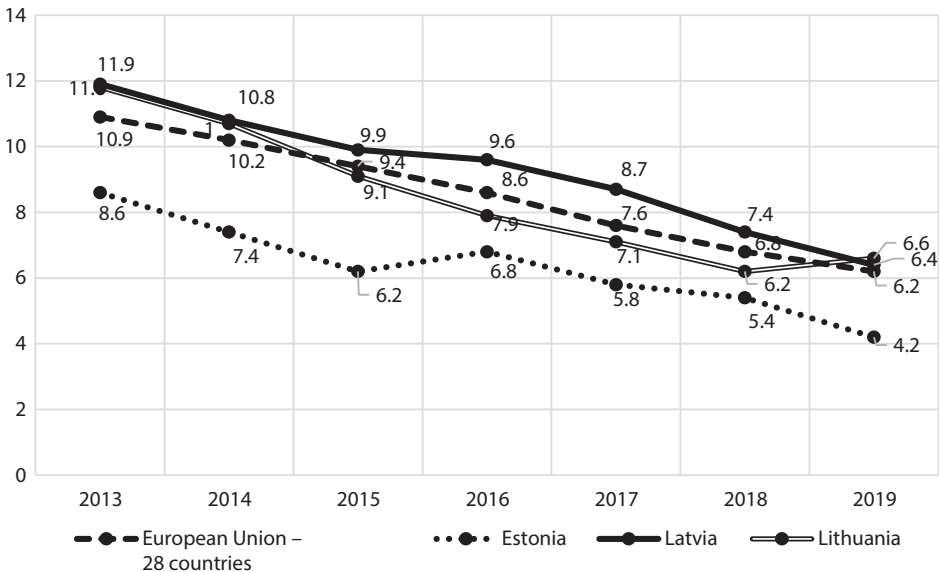
The EU Labour Force Survey (EU-LFS) is the largest European household sample survey. The EU-LFS survey provide quarterly and annual data in line with Eurostat methodology in all European Union countries, three EFTA countries (Iceland, Norway and Switzerland), and four EU candidate countries (Montenegro, North Macedonia, Serbia and Turkey).

One of the main study objects of the EU-LFS is monthly harmonised unemployment rate – one of Eurostat’s key short-term indicators. Sample size of EU-LFS in Republic of Latvia in 2017 was 42041 persons.

It is important that anonymised data sets are available in SPSS files for more detailed statistical data analysis – by statistical regions, by territories (cities or rural areas), by household size and by other indicators.

UNEMPLOYMENT IN THE REGIONS IN EU

The statistics show that unemployment rate in Baltic countries is lower than average in EU in 2019. The highest unemployment is in Latvia, followed by Lithuania. At the same time unemployment rate in Estonia is the lowest what means that only around 4 percent of populations do not have work.

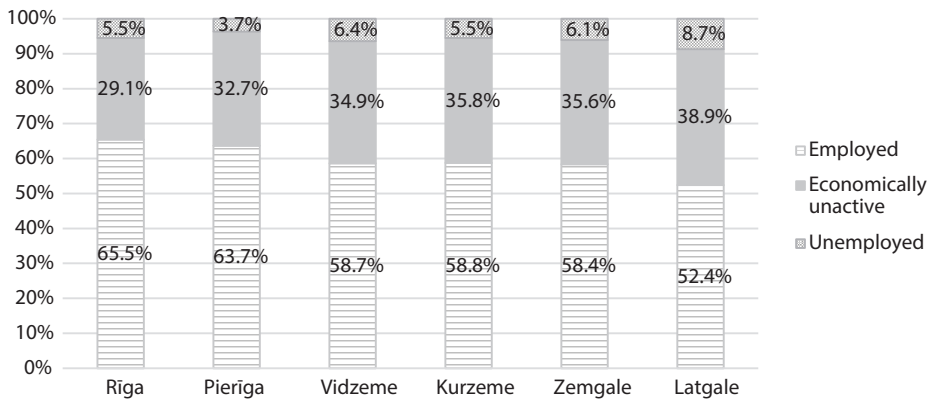


Source: Authors construction based on EU-LFS

Fig. 1. Total unemployment rate in Baltic States and EU-28 in 2013–2019 (%)

PROBLEMS AND CHALLENGES OF UNEMPLOYMENT: CASE OF LATVIA

According to the administrative breakdown, there are 6 regions in Latvia: Rīga, Pierīga, Vidzeme, Kurzeme, Zemgale and Latgale. In Figure 2 is revealed economic activity in regions of Latvia. Unemployment is very different in those regions indicating higher unemployment in some regions: in Vidzeme and especially in Latgale.



Source: Authors construction based on EU-LFS

Fig. 2. Economically active and inactive population in regions of Latvia in 2017 (%)

Economic activity varies considerably between regions of Latvia. The highest unemployment is in Latgale region where also the total economically active population is the lowest and it differs by 10 percent compared to Riga region. As well this region has the most economically inactive people meaning that part of them live on benefits from country or possibly on the benefits of the black economy. Vidzeme and Zemgale region is in similar situation, but interesting that Kurzeme region and Riga region is on the same level of unemployment, but the Pierīga region has the lowest unemployment in the country driven by the migration of young families – to areas adjacent to the capital – away from city noise, but at the same time close to wider opportunities of studies and employment.

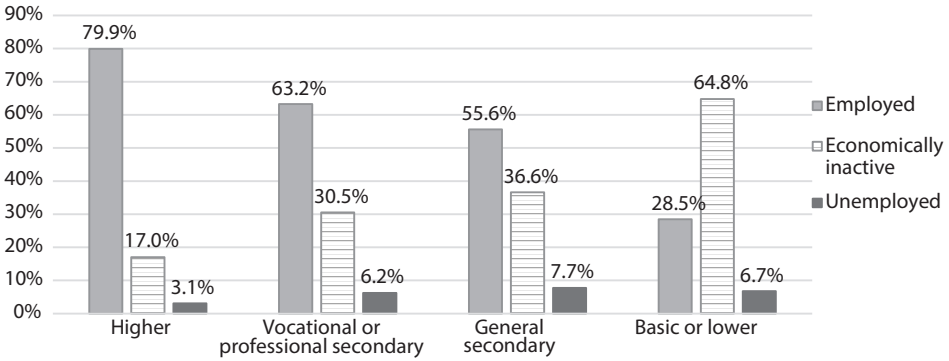
Table 1

Main results of analysis of variance (ANOVA) on economically active and inactive population in 2017 by education level in Latvia

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-------|-------------|----------|-------|
| Between Groups | 3176.987 | 4 | 794.247 | 1024.416 | 0.000 |
| Within Groups | 23600.649 | 30440 | 0.775 | | |
| Total | 26777.636 | 30444 | | | |

Source: Authors' calculations based on EU-LFS data in 2017

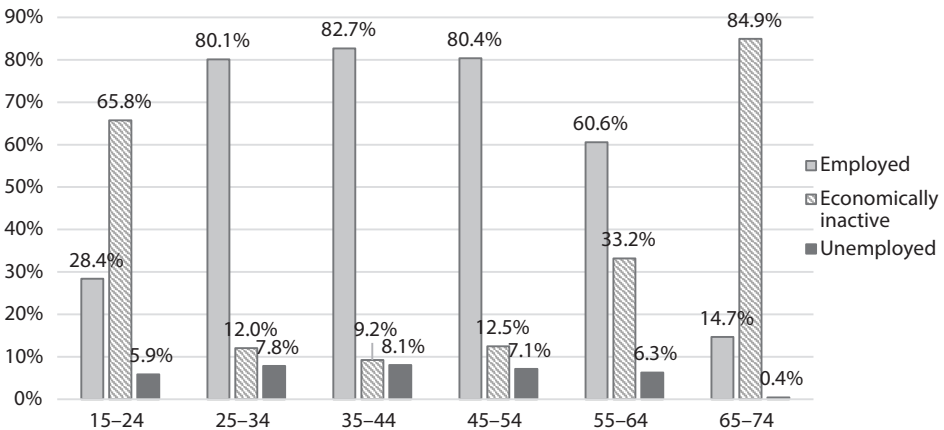
The data of Table 1 (results of ANOVA) indicate that there are differences in economic activity by education level in Latvia and they are statistically significant (sig. 0.000). Data included in Figure 3 describe interaction between education level and economic activity.



Source: Authors construction based on EU-LFS

Fig. 3. **Economically active and inactive population by education level in Latvia in 2017 (%)**

Statistics shows that the higher the level of education, the less likely it is to be unemployed in Latvia and economic inactivity is highly prevalent among people with basic education or lower. But unemployment is the highest among them with the general secondary education, followed by those with basic education or lower. The analysis reveals that getting higher education can be a guarantee for the future to have a job and develop their further life with better living conditions and more opportunities for qualitative life.



Source: Authors construction based on EU-LFS

Fig. 4. **Economically active and inactive population by age-group in Latvia in 2017 (%)**

The data of Figure 4 indicates that the most employed age group in Latvia is those between 35 to 44 years old, followed by 45–54 years old and 25–34 years old. Economic inactivity and unemployment in these three age groups are the smallest. People between 15 and 25 years old are mostly economically inactive as well as those who are in retirement – 65 to 74 years old. In many scientific publications in many countries is concluded that there are differences in economic activity by gender. To test this aspect, authors analysed results on economic activity by gender – main results of analysis are included in Table 2.

Table 2

Main statistical indicators of economic activity in 2017 by gender in Latvia

| Gender | N | Mean | Standard Deviation | Standard Error of Mean |
|--------|-------|------|--------------------|------------------------|
| Male | 13750 | 1.68 | 0.910 | 0.008 |
| Female | 16695 | 1.81 | 0.956 | 0.007 |

Source: Authors' calculations based on EU-LFS data in 2017

As the data of Table 2 indicates – the economic activity of male and female respondents are very alike with more differences in evaluations by female respondents – indicated by bigger standard deviation. To analyse deeper and be more precise in conclusions the t-test was used to test statistical hypotheses on differences of means on economic activity by female and male respondents on economic activity and inactivity – results are included in Table 3.

Table 3

Analysis of differences with t-test on economic activity in 2017 by gender in Latvia

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | |
|-----------------------------|---|-------|------------------------------|--------|-----------------|-----------------|-----------------------|
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| Equal variances assumed | 514.430 | 0.000 | -12.131 | 30443 | 0.000 | -0.131 | 0.011 |
| Equal variances not assumed | | | -12.190 | 29822. | 0.000 | -0.131 | 0.011 |

Source: Authors' calculations based on EU-LFS data in 2017

As the data of Table 3 indicate that there are rather big differences in economic activity by gender in Latvia and the differences are statistically significant with very high probability (sig. 0.000).

In many scientific publications in many countries is concluded that there are differences in economic activity by age groups. To test this aspect, authors analysed results on economic activity by age groups. Main statistical indicators of economic activity in 2017 by age group in Latvia are included in Table 4.

Table 4

Main statistical Indicators of Economic activity in 2017 by age group in Latvia

| Age group | Mean | N | Standard Deviation |
|-----------|------|-------|--------------------|
| 15–24 | 2.37 | 3499 | 0.895 |
| 25–34 | 1.32 | 4322 | 0.677 |
| 35–44 | 1.27 | 4905 | 0.616 |
| 45–54 | 1.32 | 6088 | 0.684 |
| 55–64 | 1.73 | 6490 | 0.929 |
| 65–74 | 2.70 | 5141 | 0.709 |
| Total | 1.75 | 30445 | 0.938 |

Source: Authors' calculations based on EU-LFS data in 2017

To make deeper analysis and be more precise in conclusions analysis of variance or ANOVA was used to test statistical hypotheses on differences of mean evaluations by respondent's age group on economic activity – results are included in Table 5.

Table 5

Analysis of Differences with ANOVA on economic activity in 2017 by age group in Latvia

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-------|-------------|----------|-------|
| Between Groups | 9104.273 | 5 | 1820.855 | 3136.075 | 0.000 |
| Within Groups | 17673.363 | 30439 | 0.581 | | |
| Total | 26777.636 | 30444 | | | |

Source: Authors' calculations based on EU-LFS data in 2017

As the data of Table 5 indicates there are differences in economic activity by age group in Latvia and they are statistically significant (sig. 0.000).

CONCLUSIONS

The analysis of the theoretical research showed that different aspects of employment is a problem during the last decades in many countries. Researchers focus on employment differences between male and female, education levels and urban/rural areas.

Unemployment rate shows that the highest unemployment is in Latvia, followed by Lithuania. At the same time unemployment rate in Estonia is the lowest and is below EU average level.

In case of regions of Latvia, the highest unemployment is in Latgale region where are also the most economically inactive people, but most economically active regions in Latvia is Pierīga and Rīga region.

In context of education level, in the most favourable position are people with higher education – the higher the level of education, the less likely it is to be unemployed in Latvia, economic inactivity is highly prevalent among people with basic education or lower, but the most unemployed people are with general secondary education.

There are differences in employment in Latvia by gender and they are statistically significant with very high probability or very low significance level (sig. 0.000).

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PERFORMANCE MEASUREMENT TOOLS FOR TOTAL QUALITY MANAGEMENT IN APPLICATION TO HEALTHCARE ENVIRONMENT: A QUALITATIVE SYSTEMATIC REVIEW

DANA GROSSU
HENRIJS KAĻĶIS

Abstract

In the context of rapidly changing business environment, total quality management (TQM) has become a common approach for overall organisational management with the strong emphasis on continuously improving the quality of processes and its outcomes. Hospitals and other healthcare organisations across the globe have been progressively implementing TQM to reduce costs, improve efficiency and provide high quality patient care. Moreover, TQM has become an important part of healthcare organisations' competitive strategy in quality for healthcare delivery. The aim of the research is to identify the most commonly used measurement tools for TQM in application to healthcare environment using comprehensive review of TQM literature. Guided data search and screening process are conducted using qualitative systematic review, and the results identified and interpreted using a quantitative content analysis method of the research. The search of literature was conducted using 4 academic online databases – EBSCO, SCOPUS, MEDLINE, and WEB of SCIENCE. A total of 234 articles were initially searched, full texts of 32 articles were assessed, and 6 articles that met the inclusion criteria were finally included in the research. As the result of systematic article review, the following information has been synthesised: Benchmarking and ISO Standards, Competitive Benchmarking, Management and Employee Self-Developed Questionnaire, Customer Satisfaction Survey, Quality Award Self-Assessment.

Keywords: total quality management, healthcare, organizations, performance, measurement tools

JEL code: M10

INTRODUCTION

In its broad meaning, TQM is directing (managing) the whole (total) production process to produce an excellent (quality) product or service (Helms, 2006).

Øvretveit defines TQM as organisation wide management philosophy for continuously improving the quality of products/services and its processes.

Continuously quality improvement is the responsibility of everyone who is involved in the production or use of the products or services offered and hence is interested in its quality (Øvretveit (2014). Total quality management in European healthcare).

Furthermore, TQM application to the health care (HC) environment is the provision of the best possible care through continuously improving service to meet or exceed the needs and expectations of the customer. The customer in the health care environment could be the patient, staff, physician and community serviced by the HC organisation.

Thus, there are three dimensions of quality in healthcare: Patient quality, Professional quality, Management quality (Øvretveit (2014). Total quality management in European healthcare).

Moreover, one can distinguish eight main principles of TQM. Those principles are: (1) Customer-focused; (2) Total employee involvement; (3) Process-centered; (4) Integrated system; (5) Strategic and systematic approach; (6) Continual improvement; (7) Fact-based decision making; (8) Communications (Westcott, 2013). Those principles are core values on which organisation is to operate regardless of the field of activities.

Deming and Juran observed that quality involves planning and administration the activities necessary to achieve a high level of performance in a process and identifying opportunities for improving quality and customer satisfaction (Wood, 2005). In this respect it is essentially to elaborate performance measurement tools for determining the results that have been reached and the gaps between the desired outcomes and real situation.

Thus, the aim of the research is to identify the most commonly used measurement tools for TQM in application to healthcare environment using comprehensive review of TQM literature.

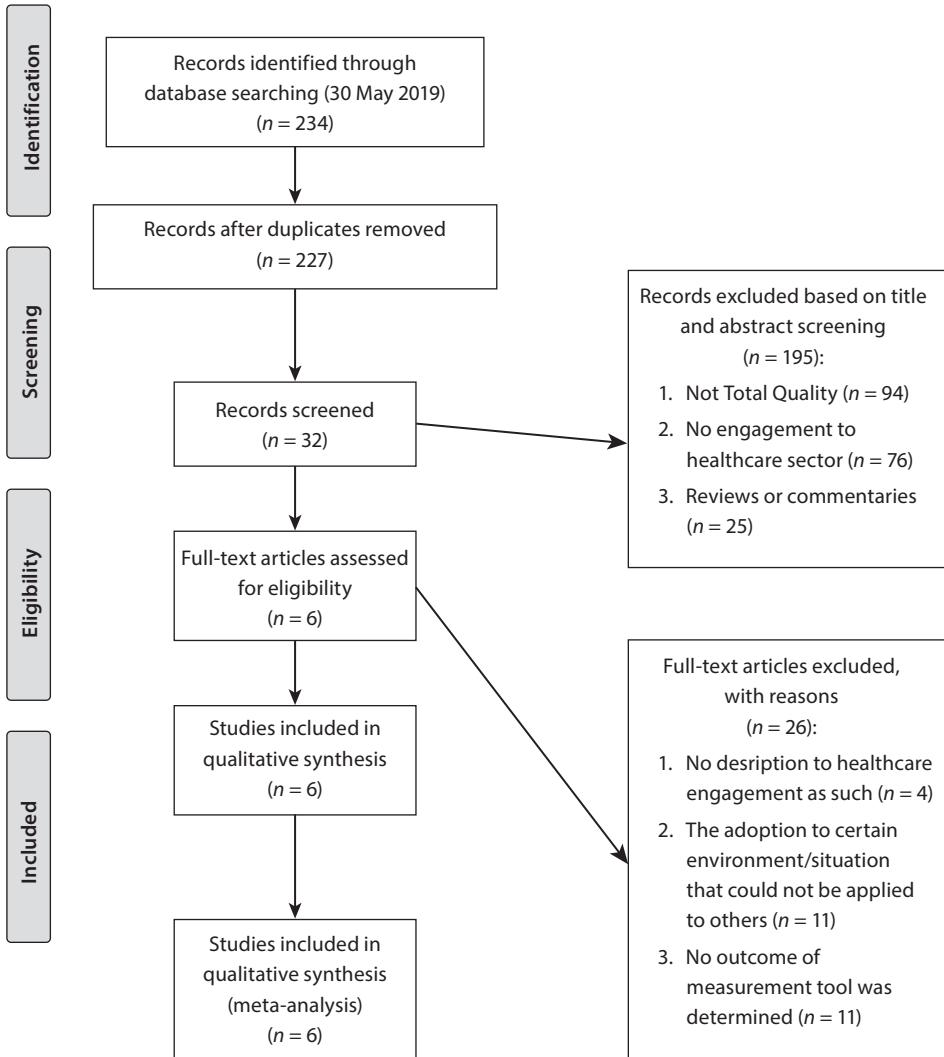
METHODS

The research is conducted using two methodological guidelines: (1) qualitative systematic review for data collection that meet the criteria set (Simon & Fielding, 2006) and (2) a qualitative content analysis (Elo & Kyngas, 2008) to identify the finding and interpret the results of the research. The qualitative systematic review was conducted to provide broadened understanding of a particular phenomenon of interest by combining or comparing the finding from many qualitative studies (Simon & Fielding, 2006). A qualitative content analysis provided the detailed understanding of the measurement tools for TQM evaluation that could be applied to healthcare sector.

The review process consists of the following steps: (1) developing search strategy, (2) developing criteria for inclusion and exclusion, (3) selection of articles, and finally (4) data extraction and data analysis.

SEARCH STRATEGY

A systematic search of literature was guided through academic online databases: EBSCO, MEDLINE, SCOPUS, and WEB of SCIENCE (Figure 1). The following search terms were included: (1) “total quality management”, “quality management”, “quality” (2) “healthcare”, “healthcare organizations”, “healthcare institutions”, “healthcare sector” (3) “measurement tools”, “assessment tools”, “evaluation”.



Source: developed by authors

Fig. 1. Search Flow Chart

CRITERIA FOR INCLUSION

The following criteria have been set to include articles in the research: (1) actual TQM performance evaluation/measurement/assessment tool has been described; (2) implementation to healthcare sector or environment; (3) published in English in peer-reviewed journals between January 1, 1997, and May 21, 2016.

CRITERIA FOR EXCLUSION

The following criteria has been set to exclude articles for the research: (1) reviews, commentaries, editorials; (2) dissertations, as there are no peer-reviewed publications; (3) articles that described benefits, dimensions, concept, and principles, rather than actual measurement tools for TQ; (3) articles that reported implementation strategies rather than evaluation or measurement tools for TQM.

SELECTION OF ARTICLES

After the initial search, the authors used bibliographic program RefWorks 1.0.0.1 NVivo 12.0 to identify all eligible articles. Then the authors excluded irrelevant titles and abstracts. Finally, the titles and abstracts that were potentially identified as eligible for inclusion were screened, and full texts were included into research.

DATA EXTRACTION AND ANALYSIS

Following qualitative content analysis (Elo & Kyngas, 2008), the data was managed through open coding and category creation. The primary categories related to research were used as labels, and terms in each article were coded. Categories that were developed during open coding were grouped into similar codes and created headings and making groupings in accordance to TQM dimensions. Further, all eligible articles were imported into NVivo qualitative data analysis program to code texts.

RESULTS AND DISCUSSION

A total of 234 articles were initially searched, full texts of 32 articles were assessed, and 6 articles that met the inclusion criteria were finally included in the research. As the result of systematic article review, the following information has been synthesised: Benchmarking and ISO Standards, Competitive Benchmarking, Management and Employee Self-Developed Questionnaire, Customer Satisfaction Survey, Quality Award Self-Assessment.

BENCHMARKING AND ISO STANDARDS

ISO or International Organization for Standardization has developed a set of standards for healthcare, wellbeing and safety. ISO offers solutions that support the full spectrum of services needed throughout a person's life – from medical devices to health organisation management, to health informatics and traditional medicines (ISO, 2019). Healthcare organisation benchmarking to ISO standards has been identified as one of the measurement tools for TQM system within the organisation ($n = 1$) (Dodrajka, 2007). The authors assume that a company's benchmarking and further adoption to ISO standards (like ISO: 9000) is essential as it indicates the level of quality which customer expects.

COMPETITIVE BENCHMARKING

As a component of total quality management, benchmarking is a continuous process by which an organisation can measure and compare its own processes with those of organisations that are leaders in a particular area (Benson, 1994). The benchmarking theory is built upon performance comparison, gap identification and changes in the management process (Kay, 2007). The following authors have clearly reported the competitive benchmarking ($n = 2$): Dodrajka, 2007, and Kay, 2007. The authors indicate that competitive benchmarking is used at the strategic level and determines the standards for organisations performance against corporate priorities, such as customer satisfaction, employee motivation, market share, and return on sales.

MANAGEMENT OR EMPLOYEE SELF-DEVELOPED QUESTIONNAIRE

Another instrument for measuring performance of TQM within the organisation is self-developed and self-administered questionnaire, which is conducted with management staff and employees, for example, doctors and medical staff. The researchers suggest using questionnaire which is developed as the synthesis of information during the research, and then adjusted to the environment in which company is operating ($n = 3$) (Talib et al., 2012, Joseph et al., 1997, Salisu et al., 2016). Furthermore, such questionnaire identifies critical factors of TQM in relevant industry/environment and provides holistic framework for TQM improvement.

CUSTOMER SATISFACTION SURVEY

Furthermore, as TQM adopts the principles of customer (or patient) oriented philosophy of management, the customer satisfaction survey is a powerful tool for measuring the performance of TQM within the company ($n = 2$) (Andrzejewski, 1997, Salisu et al., 2016).

Taking into account that the TQM organisations perceive customers as partners, the decisions are made based on the customer expectations and the level of satisfaction. Moreover, it is vital to follow up the customers in order to respond fast enough to new customer needs and to make sure that the resources are used as effectively as possible to provide customer satisfaction.

QUALITY AWARD SELF-ASSESSMENT

The authors distinguish three types of self-assessment frameworks: (1) The Malcolm Baldrige National Quality Award (MBNQA), (2) The Deming Prize, (3) The European Quality Award (Aly, 1997).

MBNQA is an award established by the U.S. Congress in 1987 to raise awareness of quality management and recognise U.S. companies that have implemented successful quality management systems. The award is the nation's highest presidential honour for performance excellence within US-based companies (MBNQA homepage asq.org).

THE DEMING PRIZE

The Prize recognises significant achievements of distinction that have improved performance of an organisation through the application of company-wide quality control strategies. The prestige associated with the award is widely believed to have influenced Western thinking of the subject (Kanji et al., 1992).

THE EUROPEAN QUALITY AWARD

The European Foundation for Quality Management (EFQM) was established to institute and administer the EQA. The principle objectives of EFQM are similar to MBNQA and are illustrated in the model which includes the “enablers” and the “results”.

The literature review shows that the main purpose of self-assessment is to:

- Identify strengths in key processes;
- Exploit potential areas of improvement;
- Work on areas which need improvement;
- Monitor the impact of appropriate action plans on regular basis.

The research article focuses on self-assessment of the organisation based on the Quality Award catalogue. The authors suggest that self-assessment is essentially a tool for helping organisations in a variety of ways, including for instance the opportunity to take a broader view on how TQM is impacting on various business operations, as well as the performance measurement of processes (Aly, 1997).

Table 1

Summary of the Findings

| Author | TQM Measurement Tool | Evaluation Focus/Purpose | TQM Dimension in Healthcare (quality) |
|--|---|---|---------------------------------------|
| Dodrajka, 2013 | Benchmarking and ISO Standard | Internal process evaluation, potential areas for improvement, evaluate performance against best practice | Patient Management Professional |
| Dodrajka, 2007 J. FL. Kay, 2007 | Competitive Benchmarking | External and internal process evaluation, potential areas for improvement, measuring performance of processes, evaluate performance against best practices | Patient Management Professional |
| Talib et al., 2012 Joseph et al., 1999 Salisu et al., 2016 | Management or Employee Self-Developed Questionnaire | Internal process evaluation, identify strengths in key processes, identify room for improvement, impact of TQM on various business operations | Management |
| Andrzejewski, 1997, Salisu et al., 2016 | Customer Satisfaction Survey | External evaluation, identify strengths in key processes, potential areas for improvement | Patient |
| Aly, 1997 | Quality Award Self-Assessment | Formative process evaluation, financial and non-financial benefits, comparison "like to like", evaluate performance against excellence model, impact of TQM on various business operations, potential areas for improvement | Patient Management Professional |

Source: developed by authors

Table 1 summarises the findings of the research. Following the aim of the research, five commonly used measurement tools for TQM in application to healthcare environment have been identified: benchmarking and ISO standards, competitive benchmarking, management or/and employee self-developed questionnaire, customer satisfaction survey, and finally quality award self-assessment. It has also been determined that TQM measurement tools may differ in its evaluation focus and purpose, though some of the aspects may be common for each tool. Moreover, the tools determined may also vary in respect to its dimension if applied to TQM concept: patient, management or professional.

CONCLUSION

The modern healthcare service is being encouraged to ensure uniform provision of high-quality healthcare. Therefore, to achieve quality excellence, an organisation should initiate a continuous improvement program using TQM

as a vehicle of growth and development. The crucial point of TQM system operating within the company is the measurement tools to identify the extent of TQM within the company, as well as potential areas of improvement.

From the practical point of view, the findings of this article provide healthcare management with description of measurement tools to understand TQM practice better and to develop models that are best applicable to certain organisation within specific industry profile.

Researchers or practitioners can use this study to conduct similar research in specific industry; compare and contrast the extent of TQM practice in different industry populations; develop and test the instrument for measurement of TQM across various industry populations.

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DISCIPLINARY ACTIONS AND PROCEDURES AT WORKPLACE: THE ROLE OF HR MANAGERS

UGO CHUKS OKOLIE
IDONGESIT DAVID UDOM

Abstract

Organisational discipline arises out of the need for management to be able to control the conduct of employees and to re-direct their energies towards the attainment of corporate mission and objectives. Discipline is management action that encourages and ensures compliance with laid-down rules and regulations, governing the smooth operation of an organisation. It is management's responsibility to develop and maintain effective discipline within the organisation. As in most peoples' management functions, HR managers have an extremely important role to play in the design and implementation of disciplinary procedures that are fair to all, and that cases of discipline are dealt with in accordance with the organisation's laid-down procedures. For the purpose of this article, reinforcement theory attributed to Skinner (1974), form the theoretical framework for this article. This article examines the nature of discipline, the causes of disciplinary action, the importance of disciplinary procedures and the role of HR managers in discipline handling. The article further takes a peep into the impact of objective disciplinary measures on employees' performance. The article therefore, concludes that for discipline to be a means of correcting or punishing misdeed in an organisation, management must learn to maintain discipline by applying standards in a consistent, fair and flexible manner.

Keywords: Discipline, Action, Procedure, Role, HR Managers, Employee Performance

JEL code: M2, M52, M54, H55

INTRODUCTION

Organisation involves bringing people together to achieve defined goals and objectives. In such an organisation, however good the management and however highly motivated the workforce, there will be occasions when problems or difficulties occur between management and employees. In order that employees are able to work to their optimum performance, and that the problems do not turn into bigger issues, suitable ways of dealing with them need to be devised before they occur (Foot & Hook, 1998). Needless to say, a fair degree of predictable behaviour is need from individual(s) for the achievement of organisational goals

and objectives. One of the means in ensuring decorum, progress, and effectiveness in an organisation is discipline. Therefore, where there are no proper disciplinary procedures for erring employees, there will be a deviant from the ethos, rules and regulations governing the smooth operation of organisation.

Discipline is one of the most important elements in every organisation. It is generally the backbone of every aspect of individual character because it guides how one speaks, behaves, responds to situations and treats other. Organisations are generally made up of groups of employees who are interdependent, and work together to achieve organisational goals. Thus, they interact with one another on a daily basis to fulfil their job roles and to contribute effectively to their organisation. However, people enter the workplace with their own unique attitudes; abilities, value and perceptions, and this in, itself can bring conflict in any organisation (Grossett, 1999).

According to Adams (2003), organisation rules and regulations are among the strategies designed to install good conduct on employees just like students in a school. This implies self-control, orderliness, good behaviour and obedience to organisation's authority. Also, on employment, employees are given prospectus, which spell out some of the expectations (Apalia, 2017). These rules and regulations specify in most cases what new employees should do and not do. Despite these expectations, in most cases in Nigerian business organisations, employees break these rules and regulations with wide spread indiscipline acts such as taking of alcoholic drinks, absent from work without permission, and participating in frequent strikes, these among others affect employees' performance.

Agba, Ochimana and Abubakar (2013) affirms that when things are put in proper place, the employees will have no reason not to put in their best for the achievements of the set goals and objectives of the organisation. However, the behaviour of every human being is functioning of his/her certain needs, and motives. Because of the unpredictable nature of man, it is not easy to determine what in the nature of human beings make them behave in certain ways (Schein, 1983; Knight & Ukpere, 2014). To resolve conflict between individuals and groups, between groups and management, and to ensure a harmonious work environment, managers, supervisors and other leaders apply disciplinary action/procedure to prevent escalation of bad behaviour and to maintain industrial peace (Vonai, 2013). Disciplinary action, in its essence, is designed to correct behaviour and to maintain balance in the employment relationship (Grogan, 2009). This supports the assertion of Rao (2009) who posits that when undesirable behaviour or actions are noticed in the workplace, it is thus the prerogative of leaders and managers to correct this behaviour and establish more acceptable norms or standards than those being corrected. Thus, it is needless to say that these efforts should be conducted by HR managers or professionals. Therefore, discipline and its subsequent rules and procedures form an integral part of the employment relationship between employer and employee.

In Nigerian business organisations, it is a rare manager who has a good, intuitive sense of how to investigate employee misconduct. Too frequently investigations are conducted in a haphazard manner, worse still; they overlook one or more investigative concerns. In conducting an employee investigation, it is important to be objective and to avoid the assumptions, suppositions, and biases that often surround discipline cases. This article, therefore, attempts to explain why there is an increase in misconducts and non-compliance in the workplace amidst comprehensive disciplinary actions/procedure. Thus, the article intends to evaluate the effective and fairness of disciplinary procedure on employee performance and most importantly, the role of HR managers in discipline handling.

CONCEPT AND NATURE OF DISCIPLINE

The Shorter Oxford English Dictionary defines discipline in the following ways: to subject to discipline is to educate or train, to bring under control. The term discipline can be used in various ways. It can be referred to as self-discipline, where an individual, as a result of practice and training, works in an ordered, self-controlled manner. This is self-control or voluntary submission, arising from the inner motives of the individual to organise and regulate his/her behaviour in a systematic and acceptable manner. Increase in self-discipline often reduces the need for supervisory control in the workplace. Discipline can also be used to refer to esprit-de-corps. This is concerned with orderly behaviour within an organisation, similar to self-discipline. It involves a spirit of loyalty and dedication or devotion to group norms and values, which unite and integrate the members of a group who are engaged in a common endeavour. In an organisation, it calls for monitoring of group behaviour and control of group performance to ensure compliance with rules and to correct deviations (Torrington & Hall, 1995). Moreover, it can refer to a judicial process. This involves the monitoring and enforcement of obedience, and applying established rules so as to avoid occurrence of undesirable and unacceptable acts. It assumes that in group efforts, some individuals will occasionally break established rules. Thus, some processes must be put in place for deviations to be brought to light, and the need for improvement ensured by applying some form of punishment or sanctions (Torrington & Champam, 1979; Torrington & Hall, 1995).

According to Byars and Rue (2009), discipline is an action taken against an employee when the employee has violated an organisation's rule or when employee's performance has deteriorated to the point where corrective action is needed. Dumisan (2002) defined discipline as a system of rules and mechanism for ensuring that disciplinary codes are followed. This implies that every organisation has its rules and regulations (dos and don'ts). Observance of these sets of rules and regulations in itself is discipline. Bohnader and Snell (2007) define discipline as training that 'corrects moulds, or perfects knowledge,

attitudes, behaviour, or conduct.” This definition tries to take away the thinking by many people who look at ‘discipline’ as something aimed at an individual for negative reasons or that the action is meant to make someone feel the pain. It is obvious from the above definitions, that the concept of discipline has three basic meanings:

1. Treatment that punishes;
2. Orderly behaviour in an organisation setting;
3. Training that moulds and strengthens desirable conduct or corrects undesirable conduct and develops self-control.

To some managers, discipline is synonymous with force. They equate the term with the punishment of employees who violate rules or regulations. Other managers think of discipline as a general state of affairs. That is, a condition of orderliness in which employees conduct themselves according to standards of acceptable behaviour. Discipline viewed in this manner can be considered positive when employees willingly practice self-control and respect organisational rules. The third meaning considers discipline a management tool used to correct undesirable employee behaviour. Discipline is applied as a constructive means of getting employees to conform to acceptable standards of performance. In the context of this article, discipline is thus viewed as a way to correct poor employee performance. Discipline should be seen as a method of training employees to perform better or to improve their job attitudes or work behaviour. Therefore, when taken action against employees, disciplinary action should never be thought of as punishment. Discipline can embody a penalty as a means of obtaining a desired result. However, punishment should not be the intent of disciplinary action. Rather, discipline must have as its goal the improvement of the employee’s future behaviour. To apply discipline in any other way – as punishment or as a way of getting even with employees can only invite problems for management, including possible wrongful discharge suits.

NEED FOR DISCIPLINARY ACTION

The need for discipline lies in the desire of an organisation to direct its employees towards acceptable standards of behaviour. Discipline is indispensable to management control. It assists management in the maintenance of harmonious relations in the workplace (Pigrors & Myers, 1977; Idris & Alegbeleye, 2015; Dzimbiri, 2016). Nova (2012) posits that some would use disciplinary action to correct wrong behaviour while others would use it to humiliate the offenders and not to train them. This is where they display a narrow thinking that disciplinary action is to be punitive; this gives a negative idea of the whole good purpose of it. Disciplinary action therefore ensures just and equal treatment of employees, efficient and effective communication, and serves as a tool or device for enforcing organisational standards (Apalia, 2017). Also Van Der Bank and Strumpher (2007) added that the role of discipline in the workplace is to ensure that

individuals contribute effectively and efficiently to the goals of the organisation. Production of goods and the provision of services would be impeded if, for example, employees were free to stay away from work when they please, to work at their own pace, to fight with their fellow employees or to disobey their employer's instructions. Hence, it is the prerogative and duty of employers or management to ensure that their employees adhere to reasonable standards of efficiency and conduct.

Awodele-Fayomi (2015) observes that disciplinary action is aimed at improving performance of the employee by ensuring that employee behaviour is consistent with the organisation's goals. It encourages employees to behave in a manner that makes them adhere to rules and regulations. Similarly, Cole (2002) holds that the advantages of disciplinary action are three folds; it contributes to the stability of the workforce, labour turnover is minimized, and it promotes productivity. Dzimbiri (2016) adds that disciplinary action is an appropriate method for supervisors to use when correcting employees' misdeeds and helping them attain performance levels that meet employers' expectations. In view of the above, it can be deduced that the purpose of discipline is to correct behaviour. It is not designed to punish or humiliate an employee. Often, a positive approach may solve the problem without having to discipline. For example, if unacceptable behaviour is a persistent problem or if the employee is involved in a misconduct that cannot be tolerated, for instance, poor performance, absenteeism, insubordination, theft, and other misconduct, management may use discipline to correct the behaviour. Therefore, its major purpose is to ensure that employee behaviour is consistent with the firm's goals, and encourage employees to comply with established standards and rules, so that infractions do not occur (preventive discipline). It also seeks to discourage further infraction of rules, so that future acts will be in compliance with desired standards (corrective discipline). Hence, workplace discipline is a teaching and improvement tool or training that moulds behaviour and strengthens desirable conduct.

APPROACHES TO DISCIPLINARY ACTION

If a thorough investigation shows that an employee has violated some organisation rule, disciplinary action must be imposed. Three approaches to disciplinary action are preventive discipline, progressive discipline and positive discipline.

Preventive Discipline: Discipline is regarded as preventive when organisation design and put in place programmes or measure that discourage or dissuade organisational members from coming late, absenteeism, redundancy, disobedience to superior officer, insubordination among others. Preventive discipline is meant to prevent violation or deviation. Therefore, it is usually stated expressly without ambiguity and in simple terms for the high and the low in the organisation to understand the message. For example, "Loitering during work

hours is prohibited” (Muhammad, 2013). However, for preventive discipline to be effective, managers must create an environment of openness and honesty, one in which employees feel comfortable sharing even negative information and are appreciated for doing so in a timely fashion.

Progressive Discipline: Generally, discipline is imposed in a progressive manner. By definition, progressive discipline is the application of corrective measures by increasing degrees (Bohlander & Snell, 2007). Progressive discipline is designed to motivate an employee to correct his or her misconduct voluntarily. The technique is aimed at nipping the problem in the bud, using only enough corrective action to remedy the shortcoming. However, the sequence and severity of the disciplinary action vary with the type of offense and the circumstances surrounding it. Because each situation is unique, a number of factors must be considered in determining how severe a disciplinary action should be. The typical progressive discipline procedure includes four steps. From an oral warning (or counselling) to subsequent unsatisfactory behaviour or performance will not be tolerated, the action may progress to a written warning, to a suspension without pay, and ultimately to discharge. The “capital punishment” of discharge is utilised only as a last resort.

Positive Discipline: Positive discipline or non-punitive discipline is based on the concept that employees must assume responsibility for their personal conduct and job performance. By definition, positive discipline is a system of discipline that focuses on early correction of employee misconduct, with the employee taking total responsibility for correcting the problem (Bohlander & Snell, 2007). Nothing is imposed by management; all solutions and affirmations are jointly reached. HR managers often describe positive discipline as “non-punitive discipline that replaces threats and punishment with encouragement. The positive discipline is implemented in three steps. The first is a conference between the supervisor and the employee. The purpose of this meeting is to find a solution to the problem through discussion, with oral agreement by the employee to improve his or her performance. The supervisor refrains from reprimanding the employee or threatening him or her with further disciplinary action. Supervisors may document this conference, but a written record of this meeting is not placed in the employee’s file unless the misconduct occurs again. If improvement is not made after this first step, the supervisor holds a second conference with the employee to determine why the situation agreed to in the first conference did not work. At this stage, however, a written reminder is given to the employee. This document states that new or repeated solution to the problem, with an affirmation that improvement is the responsibility of the employee and a conviction of continued employment (Nova, 2012). However, when both conferences fail to produce the desired results, the third step is to give the employee a one-day decision-making leave (a paid leave). The purpose of this paid leave is for the employee to decide whether he or she wishes to continue working for the organisation. The organisation pays for this leave to demonstrate its desire to retain the employee. Therefore, employee given a decision-making leave is instructed to return the

following day with a decision either to make a total commitment to improve performance or to quit the organisation. If a commitment is not made, the employee is dismissed with the assumption that he or she lacked responsibility toward the organisation.

FUNDAMENTAL CAUSES OF DISCIPLINARY ACTION

Disciplinary actions usually come out of dissatisfaction of the manager with flouting of work rules, and intentional deviation from role prescriptions by an employee. Formal behaviours that may elicit disciplinary actions vary from organisation to organisation, but often depend on the size, complexity, nature of product, management policies, materials dealt with, processes involved and clientele of the organisation. Common causes of the need for disciplinary action include the following:

I. Attendance Problems

1. Unexcused absence from work;
2. Chronic absenteeism or irregular attendance;
3. Excessive lateness and tardiness;
4. Leaving office without permission;
5. Time recording offences.

II. Dishonesty and Related Problems

1. Falsification of company records or complicity with such acts;
2. Altering or use of forged documents;
3. Entering into unholy alliance with others;
4. Stealing or complicity in the act;
5. Malicious/wilful damage to company property;
6. Working for competing firms;
7. Espionage or complicity in such act;
8. Collusion with the aim of defrauding the firm;
9. Fraud or complicity in such act;
10. Deliberate faking of records/payment bills;
11. Disloyalty, including failure to disclose knowledge of misconduct committed or about to be committed against the firm.

III. On-the-Job Behaviour Problems

1. Loafing or sleeping on duty;
2. Insubordination;
3. Fighting a customer or staff while on duty;
4. Intoxication at work/smoking in restricted area;
5. Wilful breach of safety rules;
6. Delay in performing official duties, so as the elicit gratification;

7. Gambling;
8. Failure to report injuries/damages;
9. Abusive or threaten language to supervisor;
10. Sexual harassment;
11. Carelessness/horseplay;
12. Possession of narcotics or alcohol.

IV. Work Performance Problems

1. Failure to meet established production requirement;
2. Failure to complete work assignments;
3. Producing substandard products or services.

It would be impossible to itemise fully the range of behaviours that might result in disciplinary action being taken. Moreover, many employers have divided offences into two categories, depending on the seriousness with which they are viewed within the organisation. They list issues that they regard as disciplinary offences, and then itemise some as gross misconduct that they consider to be more serious.

DISCIPLINARY PROCEDURE

A procedure is a series of steps or stages through which a matter may be processed towards a decision or conclusion. Armstrong (2010) presents a general disciplinary procedure from which organisations can draw theirs from. It begins with the informal warning which is given to the employee in the first instance or instances of minor offences. This warning is administered by the employee's immediate supervisor. Secondly, a formal written warning letter is given to the employee in the first instance of a serious offence or after repeated instances of minor offences. Then further disciplinary action is given to an employee if, despite previous warnings, he or she still fails to reach the required standards in a reasonable period of time. This disciplinary action could be dismissal. Additionally, an employee can be summarily dismissed only in the event of gross misconduct as defined in the company rules. However, disciplinary action should not be taken against an employee unless the following conditions are met: first, it is undertaken only in cases where good reason and clear evidence exists. Second, it is appropriate to the nature of the offence that has been committed. Third, it is demonstrably fair and consistent with previous action in similar circumstances. Fourth, it takes place only when employees are aware of the standards that are expected of them or the rules with which they are required to conform. Fifth, employees are allowed the right to be represented by a representative or colleague during any formal proceedings. Sixth, employees are allowed the right to know exactly what charges are being made against them and to respond to those charges. Lastly, employees are allowed the right of appeal against any disciplinary action (Armstrong, 2010).

In addition, Nova (2012) argues that disciplinary procedures set out the stages through which any disciplinary action should proceed. The procedure provides an acceptable mechanism within which management may exercise control over employees when their performance or behaviour does not reach the required standards (Dzimbiri, 2009). To be deemed fair, disciplinary procedures should be used consistently and have uniform standards in the approach to disciplinary employees. This helps avoid confusion and possible legal implications caused by inconsistent and sometimes harsh disciplinary decisions that are deemed unfair and unjust. This supports the assertion of Stone (2005) who posits that an inconsistent and unplanned approach to imposing discipline leads to legal action being taken against the organisation. A disciplinary procedure should specify the following key elements: rules, offences, penalties, procedural steps, and appeal procedures.

Rules: An ideal disciplinary procedure provides for working rules and arrangements that are tailored to the specific needs of the organisation. For example, the minimum standards for the performance or conduct of employees are referred to as work rules. Most employers state those rules in the organisation's handbook or disciplinary procedure code book. Typically, work rules specify standards affecting issues, such as listed below:

1. Working hours;
2. Time for break;
3. Safety rules and reporting of injuries;
4. Reporting of lateness, absence due to illness;
5. Designated areas for smoking;
6. Standards of personal conduct;
7. Theft, fraud or dishonesty;
8. Immoral conduct;
9. Sabotage of company material or property;
10. Falsification of records (Foot & Hook, 1988).

Offences: When a rule is broken, an offence has been committed. A disciplinary procedure must seek to identify offences which would attract disciplinary action. In practice, offences are commonly classified into minor, serious, or gross misconduct.

Penalties: These are measures for dealing with specific offences. They may also be referred to as 'negative rewards.' The objectives of penalties are: to reform offenders, deter would-be offenders, and maintain the integrity of the organisation. Another way of putting it, is to see penalties as educative, corrective and punitive. Most formal disciplinary processes often employ what is called 'progressive discipline.' The step-by-step processes include:

1. Warning – oral or written (informal/formal);
2. Suspension and downgrading;
3. Fines, withholding annual increment or promotion;

4. Retirement, outright dismissal or termination of appointment (Foot & Hook, 1988).

Invariably, penalties for minor offences are aimed at educating and counselling employees, and giving them opportunity to learn and adjust.

Procedural Steps: These are usually guidelines which set out the operational drills, associated with the imposition of penalties for offences, and for appealing and challenging the penalties. The procedural steps will involve the following:

1. Specify who has the responsibility and authority to make relevant decision – Immediate Superior, Department Managers, General Manager, Managing Director, HR Manager, Disciplinary Committee, Appeals Committee, etc.
2. Provide for a right of appeal to a level of management not previously involved in the action.
3. Specify the mode of imposing various penalties which must be proportionate to offences or misconduct committed (Cole, 1986).

Appeal Procedures: This section of the disciplinary procedure should indicate what the employee should do, if he or she is not happy with the action taken against him or her. There should be a clear appeal procedure, with time limits for the submission of appeal stated. It would be too important to leave disciplinary decisions solely to the discretion of immediate superior or committee, no matter how powerful they are, without providing opportunity for an appeal. Therefore, it is essential that there be some ways for employees to initiate a review. The following channels of appeals against disciplinary actions are usually adopted:

1. **Up-the-line Approach:** Here, the employee should have the right to appeal, first to the supervisor, and then the step-by-step process may continue up the line, through the Departmental Head, HR Department, General Manager, and the Managing Director or Committees.
2. **HR Director's Intervention:** In this approach, the appellant would simply appeal to the HR Director for intervention and possible settlement.
3. **Disciplinary and Appeal Committee:** In organisations, this is the committee which is given authority to receive, hear and settle employee's appeal arising from disciplinary action. The committee could either overrule a line manager's decision or uphold it (Torrington & Hall, 1995; Torrington, Hall & Taylor, 2008).

COMMON DISCIPLINARY PROBLEMS

According to Torrington *et al.* (2008), some of the disciplinary problems faced in several workplaces among others include: first, negligence, which is defined as failure to do the job properly. This is different from incompetence because the assumption here is that the employee can do the job properly but has

not; second, unreliability, which is failure to attend to work as required, such as reporting late for work and absenteeism. Third, insubordination, this is refusal to obey an instruction or deliberate disrespect to someone in a position of authority. Fourth, interference with the rights of others, this covers a range of behaviours that are socially unacceptable. This involves fighting, which is clearly identifiable, harassment and intimidation which may be a bit difficult to establish. Fifth, theft, this is clear cut aspect of behaviour that is unacceptable especially when it is from an employee and lastly, safety offences, these are aspects of behaviour that can cause accidents or hazards. Nova (2012) described disciplinary problems as those acts that are contrary to the rules and regulations of the workplace. They can be caused or solved by either management or employees themselves. Torrington *et al.* (2008) asserts that a disciplinary problem is as likely to be solved by management action as it is likely to be solved by employee actions.

There are a number of challenges associated with discipline. First, workers are unhappy, managers spend time on each disciplinary case, interpersonal relationships between managers and employees suffer and eventually the overall productivity of the company drops (Cropanzano, Bowen & Gilliland, 2007). Since this method mainly focuses on the use of threats or penalties thereof, what it does is forcing the employees to leave up to the expectations of the organisation (Dzimhiri, 2009). Secondly, the use of punishments and penalties may cause anger, apathy, resentment and frustration on the employees' side and severally affect production (Rao, 2009; Mgbemena, Mbah & Ejike, 2015; Dzimhiri, 2016). Third, the penalty-driven disciplinary system usually makes the manager a 'bad person.' Therefore, most managers are reluctant to punish employees because it makes them feel like they are wrong. Instead, they tend to wait until a small behaviour turns into a crisis (Dzimhiri, 2016). Fourth, employees on the other hand see punishment as personal attack, the manager as a dispenser of punishment and therefore stop communicating with superiors (Rao, 2009; Apalia, 2017). Fifth, progressive discipline only generates compliance and not commitment (Decenzo & Robbins, 2007). Some HR professionals according to Bohlander and Shell (2007), believed that progressive discipline has certain flaws, including its intimidating and adversarial nature that prevent it from achieving the intended purpose. Therefore, effective discipline should come from self-discipline in which an employee changes and reinforces his/her own behaviour without much external influence (Positive discipline).

IMPACT OF OBJECTIVE DISCIPLINARY ACTIONS ON EMPLOYEES' PERFORMANCE

Nwachukwu (2009) observes that management's inability to enforce discipline can be reason for employees' job dissatisfaction, low morale and consequently low productivity. All forms of discipline, however rigid are to prevent the employees from breaking the rule. Discipline seldom compels

good behaviour; successful discipline induces the employee to control himself by avoiding proscribed action (Mgbemena et al., 2015). When seeking reasons for unsatisfactory behaviour, supervisors or managers must keep in mind that employees may not be aware of certain work rules. Before initiating any disciplinary action, therefore, it is essential that supervisors or managers determine whether they have given their employees careful and thorough orientation in the rules and regulations relating to their jobs. Unfortunately, in Nigerian business organisations, some supervisors or managers try to build a case to justify their corrective actions only after they have decided that a particular employee should be discharged. In the opinions of Torrington and Hall (2004), disciplinary action can be punitive rather than corrective depending on the disposition of the person who is using it and the management style in the organisation. They remarked that fair treatment produces better result because when rule violations are enforced in an inconsistent manner, the rule loses its impact. Consequently, morale will decline and employees will question the competence of management because productivity will equally drop as a result of the employees' perceived insecurity and anxiety.

Therefore, when discipline becomes selective, there is bound to be crisis in the organisation which surely affects performance both at individual and organisational level. In the light of the above, discipline is understood to be a means of correcting or punishing misdeed in an organisation. But while this observation is correct and acceptable, it must be carried out in a manner that in every situation, justice will not only be done but will be seen to have been done. This implies that discipline should be imposed without generating resentment. Therefore, sound and effective disciplinary system in an organisation should be immediate, consistent, impersonal, prior warning and notice acquaintance or knowledge of rules – timely action-fair and just action. These ultimately lead to greater productivity and improved performance.

ROLE OF HR MANAGERS IN DISCIPLINE HANDLING

The rights of managers to discipline and discharge employees are increasingly limited. There is thus a great need for managers at all levels to understand discipline procedures. Disciplinary action taken against an employee must be for justifiable reasons, and there must be effective policies and procedures to govern its use. Such policies and procedures assist those responsible for taking disciplinary action and help ensure that employees will receive fair and constructive treatment. Equally important, these guidelines help prevent disciplinary action from being voided or reversed through the appeal system. A major responsibility of the HR department is to develop, and to have top management approve, its disciplinary policies and procedures. The HR department is also responsible for ensuring that disciplinary policies, as well as the disciplinary action taken against employees, are consistent with the labour agreement (if one exists) and conform to current laws.

Discipline is a sensitive issue requiring skilful handling, and in many organisations, it has traditionally become a function that has been left to HR managers. This has been partly due to the fact that HR managers were more likely to be trained in skilful handling of sensitive interpersonal issues, but also many line managers or supervisors were often unwilling to handle issues that might result in their unpopularity and cause difficulties in maintaining a suitable relationship with someone they had to work with on a daily basis. However, this attitude is said to be changing as more and more HR functions are being devolved to line management. Immediate supervisors or line managers in many organisations are nowadays expected to handle disciplinary matters that arise in their sections, at least, in the early stages. This supports the assertion of Bohlander and Snell (2007) who posits that the primary responsibility for preventing or correcting disciplinary problems rests with the employee's immediate supervisor or line manager. This person is best able to observe evidence of unsatisfactory behaviour or performance and to discuss the matter with the employee. Should discipline become necessary, the employee's immediate supervisor or line manager is the logical person to apply the company's disciplinary procedure and monitor employee's improvement?

The HR managers still have several important roles to play when compare with the immediate supervisors or line managers in handling of sensitive interpersonal issues. They should devise the disciplinary procedure, provide specialist advice, ensure that everyone is aware of and acts consistently with the procedures. In addition to these, they are to monitor the effectiveness of the procedures and ensure that changes in policies are brought about when necessary.

THEORETICAL FRAMEWORK

The theory upon which this article was anchored is Skinner's Reinforcement theory propounded in 1974. The choice of the theory was informed by its relative importance to the phenomenon under study and can help in explaining the subject matter. Reinforcement theory expresses that belief that changes in behaviour take place as a result of an individual's response to events or stimuli and the ensuing consequences (rewards or punishment). Individuals can be conditional to repeat the behaviour by positive reinforcement in the form of feedback and knowledge of result (Skinner, 1974). Reinforcement theory by Skinner provides a technical description and application of discipline (Werner, 2007). According to this, learning needs to take place before desired behaviour can occur. In this context, learning is defined as a situation where behaviour is influenced by the consequences thereof. According to Werner (2007), positive reinforcement, negative reinforcement, and punishment are examples of this learning process. As for Luthans and Kreitner (1985), positive reinforcement would constitute the consistent presentation of something desirable (for instance, recognition). On the other hand, negative

reinforcement defined as the reinforcement of behaviour that reduces negative situations (for example, shouting at someone where the shouting only stops after compliance). And punishment involves an undesirable action towards a person (for example, stopping the salary of an absent worker). Skinner (1974) argued that creating pleasing consequences to follow specific forms of behaviour would increase the frequency of that behaviour. He demonstrated that people will most likely engage in desired behaviours if they are positively reinforced for doing so; that rewards are most effective if they immediately follow the desired response; and that behaviour that is not rewarded, or is punished, is less likely to be repeated.

Therefore, reinforcement strengthens behaviour and increases the likelihood that it will be repeated. In this regard, managers in both the public and private sectors are advised to make use of different forms of disciplinary measures starting from the mildest to the most severe such as warnings (i.e., verbal, written and final written); suspensions (with or without remuneration and reduction in annual salary); withholding or determent of increment; rehiring; transfer, demotion; termination, discharge from service or compulsory retirement; and dismissal are some of the options mentioned (Grossett, 1999; Victor & Maurice, 2012; Vonai, 2013); Knight & Ukpere, 2014; Awodele-Fayomi, 2015; Idris & Alegbeye, 2015; Dzimbiri, 2016; Apalia, 2017).

This article recommends a positive discipline, which requires a cooperative environment in which the employee and the supervisor engage in joint discussion of problem solving to resolve incidents of employee irresponsibility or where counselling sessions between the employee and the supervisor or line manager replaces threats and punishment with encouragement.

CONCLUSION

Discipline is management action that encourages and ensures compliance with laid-down rules and regulations, governing the smooth operation of an organisation. Discipline can only be a means of correcting or punishing misdeed in an organisation only if management learn to maintain discipline by applying standards in a consistent, fair and flexible manner. The article recommended that three components are necessary for the effective maintenance of a disciplinary procedure in an organisation. The components include consultation or negotiation, communication with everybody concerned regarding the exact way in which the system operates, and training of the individuals involved in a disciplinary process. In addition, the application of discipline should be immediate, with warning, consistent and impersonal. The key role of HR managers therefore, are to devise the disciplinary procedure, provide specialist advice, ensure that everyone is aware of and acts consistently with the procedures, monitor the effectiveness of the procedures and ensure that changes in policies are brought about when necessary.

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DETERMINATION ASPECTS OF POSSIBLE PURCHASING PRICES FOR BLUE MUSSEL PRODUCTS FROM THE BALTIC SEA¹

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Abstract

Demand for marine products has been relatively high and is increasing in most of countries. With higher demand for higher-value and protein-rich products population is looking for other sources that could be protein-rich products and might be substitute for fish products. Blue mussel contains proteins and minerals therefore it might become as food and feed ingredient and supplement product for food. Experience in many countries world-wide where mussel production is more developed has indicated that important aspect in realisation of the production is effective marketing. The following research methods were used in the research: studies of scientific publications on blue mussel price and factors influencing the price, survey of different stakeholders in mussel farming – public administrators, entrepreneurs and researchers; expert interviews. The data obtained from the study were analysed by indicators of descriptive statistics, cross – tabulations, testing of statistical hypothesis with t–test and analysis of variance – ANOVA, as well as correlation analysis and one of the most applied multivariate analysis methods – factor analysis. Based on experts’ survey the results indicated that experts are ready to pay more for fresh mussel rather than for frozen mussel. The most of expert’s answers indicated the purchase price 5 euros for kilogram of frozen blue mussel.

Key words: price; blue mussel; survey of stakeholders; marketing; the Baltic Sea

JEL codes: M31; M32

INTRODUCTION

The European Union is creating favourable market conditions for industries which are based on sustainable and smart growth what is indicated by the European Commission in 2012 and in 2014 (European Commission, 2012; European Commission, 2014). In European policy documents, marketing is mentioned as important aspect to realize future trends and to compete in global market.

Knowledge and innovation have been indicated as main drivers of European economy, and “the sea and the coasts are drivers of the economy”, therefore it is

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necessary to unlock the potential of the blue economy (European Commission, 2012) to achieve smart and sustainable growth of Europe (European Commission, 2010).

In the Baltic Sea region several aspects have been researched to analyse its potential, and mussel farming is one of the fields in the Baltic Sea which potential is being researched in last decades. Mussel farming is a new field in the Baltic Sea region and many aspects are being researched.

Price is the key part of the marketing mix and the consumer considers the value of the product. Pricing decision plays an important role in the profit generation and for the new field it is important aspect.

THEORETICAL FINDINGS

Consumers' demand for healthy and ecological food has increased the sales volume of organic sector. Organic food market has rapidly increased in last decade what is confirmed also by researchers Cottingham (Cottingham, 2014); Marian and his colleagues (Marian, et al., 2014). It has affected demand for fish and fish products. Blue mussel is a high protein source researcher Lindahl and his colleagues (Lindahl, et al., 2005) already in 2005 have stressed that and it lives in the Baltic Sea as well, however this industry has not been developed. Consumers link organic food to a healthy and environmentally friendly rather than conventional food what has been concluded in Tregear and his colleagues (Tregear, et al., 1994) research results; Magnusson and his colleagues (Magnusson, et al., 2003) research results; Hughner and his colleagues (Hughner, et al., 2007) research results and organic foods perceived to be more expensive, but high price is as deterrent what is stressed by Magnusson and his colleagues research results; by Hughner and his colleagues research results.

Roddy and her colleagues' research paper in 1996 (Roddy, et al., 1996) highlighted the consumers' negative attitude regard organic product due to lack of availability, price and lack of promotion. Mussel farming has not been well presented on webpages and social networks concluded by Ozolina, Sloka in 2018 (Ozoliņa & Sloka, 2018) and promotion activities might stimulate customer interest to buy the product. Mussel is marine product and marine products are some the most traded food items in the world what is indicated in FAO in 2018 published material (FAO, 2018). Demand for marine products has been relatively high. With increasing demand for high-value and protein-rich products, the population is looking for other sources that could be protein-rich product and might be substitute for fish product.

Price is the amount of money to exchange the product. Customers perceive that in a farmers' market it is possible to obtain a higher-quality product, a better value for the money, more reasonably priced is stressed in McGarry-Wolf and his colleagues (McGarry-Wolf, et al. 2005) research results.

EMPIRICAL RESEARCH RESULTS

An expert survey was organised to analyse development aspect of mussel farming in the Baltic Sea Region (Denmark, Estonia, Finland, Germany, Latvia and Sweden). Experts were selected by their working experience and were invited to answer questions regarding their habits by habits of blue mussel consumption. Experts were invited to answer about mussel consumption frequency over the last 12 months, evaluation scale was set from 0–10, where zero time was consumed mussel and 10 – ten and more time consumed mussel. Experts could not specify frequency of mussel consumption if they had no opinion on respective analysed aspect – there were one to two percent of responses and they were not included in this analysis.

Table 1

Main statistical indicators of evaluation by experts of frequency to consume mussel over the last 12 months

| Statistical indicator | |
|------------------------|-------|
| Mean | 3.44 |
| Standard Error of Mean | 0.376 |
| Median | 2 |
| Mode | 1 |
| Standard Deviation | 3.097 |
| Range | 10 |
| Minimum | 1 |
| Maximum | 11 |

Source: Zaiga Ozoliņa conducted survey, $n = 68$

The results indicated that the majority of experts have not consumed mussel in last the 12 months (mode 1). Averagely the experts have consumed 2.44 time mussels over the last the 12 months (statistical indicator mean is 3.44, median 2).

Table 2

Distribution of expert evaluations on frequency regard mussel consumption over last 12 months – the Baltic Sea Region countries expert survey results in 2018

| Evaluation | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------|-----------|---------|---------------|--------------------|
| 0 | 24 | 35.3 | 35.3 | 35.3 |
| 1 | 14 | 20.6 | 20.6 | 55.9 |
| 2 | 8 | 11.8 | 11.8 | 67.6 |
| 3 | 6 | 8.8 | 8.8 | 76.5 |
| 4 | 2 | 2.9 | 2.9 | 79.4 |
| 5 | 2 | 2.9 | 2.9 | 82.4 |
| 6 | 3 | 4.4 | 4.4 | 86.8 |
| 7 | 1 | 1.5 | 1.5 | 88.2 |
| 8 | 2 | 2.9 | 2.9 | 91.2 |

| Evaluation | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|-----------|---------|---------------|--------------------|
| 9 | 1 | 1.5 | 1.5 | 92.6 |
| 10 and more | 5 | 7.4 | 7.4 | 100.0 |
| Total | 68 | 100.0 | 100.0 | |

Source: Zaiga Ozoliņa conducted survey, 0 – has not consumed; 10 – 10 and more times consumed mussel

The arithmetic mean of the expert evaluations on mussel consumption over last the 12 months indicated that 35.3% of surveyed experts have not consumed mussel over last the 12 months. 20.6% of surveyed experts consumed mussel once over last the 12 months. Cumulative percent of both answers is 55.9%.

8 experts have consumed mussel more than two times and 6 experts have consumed mussel 3 times over last the 12 months.

Scientific research in many fields investigate differences in evaluations by expert's gender even considering that expert is expert and gender characteristic attitudes have not influenced the evaluation results.

Table 3

Distribution of evaluations on frequency regard mussel consumption over last 12 months – the Baltic Sea Region countries expert survey results in 2018 by gender

| Scale | Gender | | Total |
|-------------|--------|-----|-------|
| | Woman | Man | |
| 0 | 16 | 8 | 24 |
| 1 | 9 | 5 | 14 |
| 2 | 7 | 1 | 8 |
| 3 | 5 | 1 | 6 |
| 4 | 1 | 1 | 2 |
| 5 | 1 | 1 | 2 |
| 6 | 2 | 1 | 3 |
| 7 | 0 | 1 | 1 |
| 8 | 0 | 2 | 2 |
| 9 | 1 | 0 | 1 |
| 10 and more | 3 | 2 | 5 |
| Total | 45 | 23 | 68 |

Source: Zaiga Ozoliņa conducted survey, 0 – has not consumed; 10 – 10 and more times consumed mussel

Cross tabulation analysis did not show significant difference of obtained answers of experts when comparing the answers between man and woman.

Experts were invited to answer about willingness to pay for one kilogram fresh/frozen mussels in the shop/trading sites in free form.

Table 4

Main statistical indicators of evaluation by experts for paying for 1 kilogram fresh/frozen mussel in the trading site/shop

| Statistical indicator | Fresh mussel | Frozen mussel |
|-----------------------|--------------|---------------|
| Mean | 7.80 | 5.19 |
| Std. Error of Mean | 0.616 | 0.455 |
| Median | 7 | 5 |
| Mode | 10 | 5 |
| Std. Deviation | 4.040 | 2.986 |
| Range | 19 | 14 |
| Minimum | 1 | 1 |
| Maximum | 20 | 15 |

Source: Zaiga Ozoliņa conducted survey, $n = 43$

The results indicated that the experts are ready to pay more for fresh mussel rather than for frozen mussel, covered with arithmetic mean 7.80 and mode 10 (most often used evaluation) and median 7 for fresh mussel. Arithmetic mean for frozen mussel is 5.19, median 5 and mode 5.

Table 5

Distribution of evaluations on frequency to pay for 1 kilogram fresh / frozen mussel in the shop/trading site – the Baltic Sea Region countries expert survey results in 2018 by educational level

| Scale | Fresh mussel | | Frozen mussel | |
|-------|---|---|---|---|
| | Master's degree of equivalent level (EQF level 7) | Doctoral degree of equivalent level (EQF level 8) | Master's degree of equivalent level (EQF level 7) | Doctoral degree of equivalent level (EQF level 8) |
| 1 | 1 | 0 | 2 | 0 |
| 2 | 2 | 0 | 4 | 0 |
| 3 | 2 | 0 | 6 | 1 |
| 4 | 1 | 0 | 4 | 1 |
| 5 | 5 | 1 | 5 | 5 |
| 6 | 4 | 2 | | |
| 7 | 3 | 0 | 1 | 0 |
| 8 | 2 | 1 | 4 | 1 |
| 10 | 5 | 3 | 1 | 1 |
| 11 | 0 | 1 | | |
| 12 | 1 | 0 | 1 | 0 |
| 14 | 0 | 0 | | |
| 15 | 2 | 1 | 1 | 0 |
| 20 | 1 | 0 | | |
| Total | 29 | 9 | 29 | 9 |

Source: Zaiga Ozoliņa conducted survey, 0 – has not consumed; 10 – 10 and more times consumed mussel, $n = 38$

Five experts have lower than master's degree and these experts' answers were not included in this cross-tabulation analysis.

The majority of experts, which have obtained the highest education level – doctoral degree, would be ready to pay 5 euros for one kilogram of frozen mussel, whereas in favour of fresh mussel the answers were more dispersed.

Experts, which have obtained the highest education level – doctoral degree, did not pointed following numbers – 6, 9, 11, 13 and 14 at all.

Experts who's the highest obtained education level is master's degree, answers on willingness to pay for 1 kilogram fresh/frozen mussel in shop/trading site, were spread in scale. Most of the answers were received 5 euros and 10 euros per kilogram of fresh and frozen mussel.

Six experts, who's the highest obtained education level is master's degree, are willing to pay 1 kilogram for frozen mussel in the shop/trading site 3 euros per kilogram.

Experts, who have obtained the highest education level – master's degree, did not pointed out the following numbers – 9 at 13 at all.

Certain numbers might be less attractive for the customers.

Table 6

Results of analysis of variance (ANOVA) on expert evaluations on willing to pay for fresh/frozen mussel – the Baltic Sea Region countries expert survey results in 2018 by expert's age groups

| Analysed aspects | | Sum of Squares | df | Mean Square | F | Sig. |
|------------------|----------------|----------------|----|-------------|-------|-------|
| Fresh mussel | Between Groups | 77.510 | 4 | 19.377 | 1.211 | 0.322 |
| | Within Groups | 608.060 | 38 | 16.002 | | |
| | Total | 685.570 | 42 | | | |
| Frozen mussel | Between Groups | 37.001 | 4 | 9.250 | 1.041 | 0.399 |
| | Within Groups | 337.510 | 38 | 8.882 | | |
| | Total | 374.512 | 42 | | | |

Source: Zaiga Ozoliņa conducted survey, $n = 42$

One-way analysis of variance (ANOVA) was performed to determine statistical differences. The results have not showed significant difference between age groups.

The average assessment by the Baltic Sea Region (representing countries – Denmark, Estonia, Finland, Germany, Latvia and Sweden) experts of analysed aspects on factors affecting development of mussel farming were compared by the use of analysis of variance (ANOVA) and the main results were included in Table 4.

Table 7

Results of analysis of variance (ANOVA) on expert evaluations on willing to pay for fresh/frozen mussel – the Baltic Sea Region countries expert survey results in 2018 by expert's country

| Analysed aspects | | Sum of Squares | df | Mean Square | F | Sig. |
|------------------|----------------|----------------|----|-------------|-------|-------|
| Fresh mussel | Between Groups | 105.900 | 3 | 35.300 | 2.375 | 0.085 |
| | Within Groups | 579.670 | 39 | 14.863 | | |
| | Total | 685.570 | 42 | | | |
| Frozen mussel | Between Groups | 33.071 | 3 | 11.024 | 1.259 | 0.302 |
| | Within Groups | 341.440 | 39 | 8.755 | | |
| | Total | 374.512 | 42 | | | |

Source: Zaiga Ozoliņa conducted survey, $n = 42$

The experts represent different countries around the Baltic Sea; therefore the ANOVA analysis was applied by experts' representing country. The results revealed that the experts have different viewpoint regarding fresh mussel purchase price for one kilogram of mussel.

Experts who live in Germany would be ready to pay 10 or more euros for one kilogram of fresh mussel (average 11 euros per kilogram, mode – 10).

Experts who live in Sweden did not set one certain price. Average price could be 7.5 euros per kilogram (mode 5).

Experts who live in Estonia indicated different prices (average price – 9 euros for one kilogram of fresh mussel).

Experts who live in Latvia would be ready to pay 6 or more euros (mode 10) for one kilogram of fresh mussel.

To check experts' viewpoint on fresh/frozen mussel price the One-Sample test was carried out by expert gender statistical hypothesis testing on average evaluations of analysed aspects. H_0 was stated: average evaluations of experts by expert gender do not differ statistically significant and respectively alternative hypothesis: average evaluations of experts by expert gender differ statistically significant.

Table 8

Results of analysis of t-test on expert evaluations on willing to pay for fresh/frozen mussel – the Baltic Sea Region countries expert survey results in 2018 by expert's country

| | Test Value = 0 | | | | | |
|---------------|----------------|----|-----------------|-----------------|---|-------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Fresh mussel | 12.406 | 45 | 0.000 | 7.946 | 6.66 | 9.24 |
| Frozen mussel | 10.398 | 45 | 0.000 | 4.848 | 3.91 | 5.79 |
| Age | 29.729 | 45 | 0.000 | 4.370 | 4.07 | 4.67 |

Source: Zaiga Ozoliņa conducted survey, $n = 45$

The results of t-test did not show significant difference.

Table 9

Results of correlation analysis based on expert evaluations on willing to pay for fresh/frozen mussel and mussel consumption over last 12 months – the Baltic Sea Region countries expert survey results in 2018

| | | 1. Frequency to consume mussel | 2. Fresh mussel | 3. Frozen mussel |
|--|---------------------|--------------------------------|-----------------|------------------|
| 1. How many times over the last 12 months have you consumed mussels? | Pearson Correlation | 1 | 0.145 | -0.054 |
| | Sig. (2-tailed) | | 0.342 | 0.724 |
| | N | 45 | 45 | 45 |
| 2. How much would you be willing to pay for 1 kg fresh mussels in the shop/trading sites? | Pearson Correlation | 0.145 | 1 | 0.714** |
| | Sig. (2-tailed) | 0.342 | | 0.000 |
| | N | 45 | 46 | 46 |
| 3. How much would you be willing to pay for 1 kg frozen mussels in the shop/trading sites? | Pearson Correlation | -0.054 | 0.714** | 1 |
| | Sig. (2-tailed) | 0.724 | 0.000 | |
| | N | 45 | 46 | 46 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Zaiga Ozoliņa conducted survey, $n = 46$

Taking into consideration that some of experts have not consumed mussel over the last the 12 months correlation analysis was applied, and the results indicated that there is correlation between mussel purchase price and consumption.

Those experts who have not consumed mussel or consumed mussel once over last the 12 months set the price lower rather than those who used mussel more.

CONCLUSION

As the European Union is creating favourable market conditions for industries, which are based on sustainable and smart growth, and blue economy potential, should be researched and analysed in further periods to reveal opportunities and to develop new industries. In certain areas mussel farming is well known field, however in the Baltic Sea region this field is being researched to find out its potential in this region.

The expert survey revealed, that some of experts have not consumed mussel in last the 12 months. The cross tabulation analysis did not reveal difference on frequency regarding mussel consumption over last the 12 months by gender.

The results did not indicate difference on frequency by gender consuming. Averagely the experts have consumed 2 times mussel within a year.

Experts are ready to pay more for fresh mussel (mean 7.8) rather than for frozen mussel (mean 5.19). Experts, who have obtained masters or doctoral degree, would be ready to pay 5 euros per kilogram of frozen mussel. Experts, who have obtained the highest education level – master’s degree, did not pointed out the following numbers – 9 at 13 at all.

Certain numbers, which experts have not chosen at all, might be less attractive on price tag. This aspect requests further analysis.

One-way analysis of variance (ANOVA) showed significant difference between age groups regarding mussel price.

Experts in Germany would be ready to pay more than 10 euros for one kilogram of fresh mussel. Experts, who live in Latvia, would be ready to pay 6 and more euros for one kilogram of fresh mussel.

Those experts who have not consumed mussel or consumed mussel once over last the 12 months set the purchase price lower rather than those who consumed mussel more than once.

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THE IMPORTANCE OF IMPROVING THE COMPETENCE OF EMPLOYEES IN THE 21ST CENTURY

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Abstract

In the era of globalisation and the development of information technologies, increased attention is being paid to the development of workers' competences. The aim of competence is a set of attitudes and behaviour which strengthens the relationship between the institutions and employees, focusing mainly on professional, motivated, flexible and honest employees of the public administration. It is important to work and strengthen personal and professional competences. This means that there is a need to regularly assess the competencies of public administration employees in order to improve them and understand which competencies will be required today. In order to improve the quality, efficiency, development of creative thinking, knowledge and adaptation to developments and requirements of the 21st century, there is a regular need to improve personal and professional competences. As well, it must be prepared that new jobs will be created in the future, where new skills and knowledge will be needed. It is therefore important to focus on the development of new skills throughout life in the learning process, which will produce good results for career development in order to become a competitive and competent employee. The aim of the study is to find out what employees' competencies will be most demanding in the future. The methods used by the study are document analysis and methods of quantitative data analysis. The results of the study are used in practice in improving and assessing the development and necessity of the competence of public administration employees.

Keywords: Latvia, development, personnel development, competencies

JEL code: O15, J24, M59

INTRODUCTION

Increasing attention is being paid to the appropriate competence of public administration employees, to education gained and to self-motivation to develop regularly in order to perform their duties with experienced, knowledgeable specialists seeking to achieve the objectives and tasks pursued by the institution. It is necessary to define strictly what competences are and will be needed for each individual of the institution in the future, how they will be developed and evaluated. Staff competencies should be regularly taken to avoid skills

mismatches and job productivity reductions in a timely manner. And inspire regular visits to training establishments aimed at improving professional and personal competence. As a result of the development of regular competence, staff will adapt and acquire future skills and will be flexible in adapting to any innovation, prepared and open to additional responsibilities in acquiring professional experience. Identifying the need for the development of the expertise of each specialist and effectively identifying the direction of learning development by assessing its usefulness.

ROLE OF COMPETENCE AT WORK

In order to work in the professional field, to develop knowledge, to take responsibility, to plan and to pursue development, there must be a competence (Perrenoud, 2004). It is therefore important to determine what powers will be required in the performance of the post. Professional competence is the capacity, working in the professional field, personally planning and assuming responsibility (Bader, 1990). Professional competence shall be acquired with qualifications in a particular speciality and the knowledge acquired shall be applied in practice. In the 1990s, competence was described as being acquired in the educational process, based on acquired knowledge and attitudes (Stabins, 1998). People's competence can be discussed if a person is able to safely and successfully realise his or her intentions when a person has the knowledge and skills to deal with problems and challenges, and if a person is able to plan his or her activities in different situations (Tilla, 2005). This means that in working education must be closely linked to a speciality and be interested in the chosen profession. Although there are people who learn about doctors, the auto mechanic profession is a good thing to do. In the opinion of T. Koke (1999), competence is the result of learning where competencies are linked to skills based on acquired knowledge. When a person likes what he or she is doing, then the productivity of work is improving, the person tends to constantly learn something new, to develop knowledge, to gain satisfaction from the work he has done. In the process of work, it is important to be satisfied with the work done, not to fulfil the tasks of work, just because they need to be done. Competence can only be gained in action by learning or working (Melton, 1997).

Scientist F. Orthey (Orthey, 2002) considers the concept of competence as a means of achieving better and better quality work and, in order to achieve personal objectives. Given that the work of public administration involves people – team work, customers and colleagues – there needs to be good communication and cooperation skills. The person must be open, the ability to adapt to the other person, the ability to listen and listen to other opinions, and to express his or her thoughts. The working relationship depends on human attitudes and behaviour and the quality of the workplace (Kalleberg, Reskin, Hudson, 2000). Building a relationship and tackling conflict is a social

competence where a person is focused on creating and strengthening social interaction (Barblett & Maloney, 2011). Working with people is not connected with silence and avoidance of any communication. Competence takes the form of human action, attitudes and thinking, with long-term effects or determination of behaviour (Vintisa, 2004).

The Spencer Competencies were defined as the basic characterisation of the individual associated with the highest achievement in the working situation (Spencer, Spencer, 1993). Appropriate competences have the potential to achieve objectives and growth opportunities. The main competences of the national administration are: the competence of interpersonal effectiveness, tasks and processes management, personal effectiveness competencies, managerial competence, organisation understanding and value-acceptance competencies and thinking and problem-solving competencies (Competencies dictionary, 2011). However, the European list of basic principles on key competences for lifelong learning includes the following key competences: literacy, language competence, science, technological, engineering and mathematical competence, digital competence, personal, social and learning competence, civil competence, business competence and cultural awareness and expression competences (European Commission, 2018).

The important factor for the development of human competence is human interests and priorities, if a person likes and interests in his or her specialty, then he or she will be developed. This means that each person's choice for the development of competence is based on the importance of individual values. The person personally evaluates what will be achieved when attending training, how important they are, and whether there is a desire to learn something. If a person works only to get a salary or to have a job, such a person is not motivated to improve him or herself. Today, a flexible, versatile, self-motivated and inquisitive person is allowed to experience and succeed in career growth. Because such a person is open to innovation and is in a continuous rhythm of capacity development. These days, it is very important that the way human thinking is adapted and adopted today's spotlights.

DEVELOPMENT OF THE COMPETENCE OF EMPLOYEES

The development of the competence of employees shall be determined after the performance of the work of employees of the annual State Administration, specifying which competencies are needed to be improved. Appropriate training shall be identified for the development of competence. But the course visit has a certain number of visits because it depends on the institution's budget resources that are invested in personnel training. Public administrations are interested in learning something new and improving professional and personal skills. Employees' attitudes to attending, acquiring and using training (seminars, courses, conferences) are equally important. If a person goes to

attend training with great interest, there is a probability that the employee will be actively involved in the training process and will be interested in attending and listening to the course until the end and a lot of it will be beneficial. The public administration is interested in investing financial resources to achieve the objective and good job results, so regularly organises the training of employees and, as far as possible, supports the attendance of different educational establishments. If a worker visits training visits as an obligation to obtain a certificate and without getting anything new and interesting, attending those training is a disadvantage for the institution. It is therefore important to find out how useful training has been, whether it has been achieved by visitors and how valuable this learning process has been. Therefore, a test should be carried out before the certificate is issued, which will also reflect how carefully and with what interest the training was attended.

The development of competence may not only be determined on the basis of an assessment of the performance of each employee's work, but on the one hand, each member of staff shall determine what professional or personal competencies are necessary to improve. To do this, each person must be critical to himself, be familiar with his weaknesses and strengths, and develop what interferes with the work process. In order to develop the necessary competences, it must be self-motivated to work with yourself and inspire regular improvements in knowledge. Improving competence will give more opportunities for career growth, which is also, of course, a very important motivation factor for working regularly on self-empowerment. For someone to achieve something in career growth and improve the work process, he has to work with himself and his specialty needs to be heart-wrenching. Then it will also be easier to force yourself to learn something new and regularly develop knowledge, expertise.

Acquiring new knowledge and improving competences is one of the tools for creating a strong culture of specialists and public administration. The majority of employees acquire knowledge and skills development through practical work, obtaining other information from customers, colleagues, providing continuous feedback. But there is something that we have not yet learned in the course of the training process to meet new acquaintances, from which you can obtain useful information and advice that would be useful at work. Because workshops are attended or studied in an educational institution where there is an opportunity to get something new, or to share your knowledge, experience, skills, ideas and advice. And of course, learning at an educational establishment or attending seminars receives a certificate that is important for raising qualifications. In order to keep employees at a continuous stage of skills and knowledge development, it is necessary to constantly motivate and offer the extensive offer of training.

F. Orthey, has listed eight competencies to be a future competent person (Orthey, 1999):

- 1) plurality competence: capacity to cope with complex, unsafe and minor situations, creating sufficient security in these circumstances to carry out further action;

- 2) transversality competence: capacity to provide ever-increasing transitory pathways so that a reasonable conclusion can be made to a previous stage of life and to see how it can be coupled with acquiring new experience;
- 3) watching competence: observe themselves and others, understanding differing views and seeing preconditions that affect the development of the situation;
- 4) reflection competence: the ability to discern meaning and cope productively with troublesome factors;
- 5) socially communicable competence: capacity to analyse, shape and manage social situations;
- 6) the competence of the methods: the ability to model new activities and situations;
- 7) aesthetic competence: the ability to understand the importance of the environmental aesthetic on a daily basis; and
- 8) self-competence – the ability to link self-observation to the dynamic processes of the environment while maintaining balance and building the future (Orthey, 1999, 190).

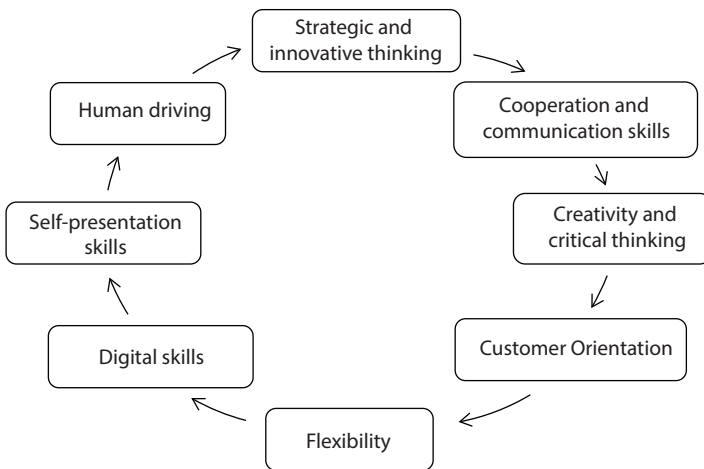
For each person, competence forms in an environment in which they live and stay, it is family, friends, interests, but whether or not a person wants to develop something depends on each individual, and of course it is influenced by personal values which, over time and by different circumstances, have developed and can change. But human personal values influence the choice and desire to learn something new, to pursue opportunities for growth, to achieve a goal and to focus on development.

REQUIRED COMPETENCIES FOR THE 21ST CENTURY

The most demanding competencies of the future that are mentioned include: strategic and innovative thinking, collaboration, creativity and critical thinking, flexibility, self-presentation skills, lifelong learning, human driving, digital skills, emotional intelligence, client orientation, skills to make decisions and address problems, communication skills, the ability to listen to different opinions, leaving on the other hand, formal enforcement, which fulfils their obligations on the basis of the rules and the performance of the work process cannot go outside the borders (see Figure 1).

A study by PayScale.com (2016) showed that recent graduates lack communication skills (Lopez, Souto, Noblejas, 2019). The office's work is increasingly moving away from huge piles of paper, strident execution, work after working time. One needs to become flexible and find their own approach to each situation. Employees must have the skills to adapt to work requirements (Ahmad, Karim, Din & Albakari, 2013; Carnevale & Smith, 2013). In order to adapt to the skills required by future professions, care must be taken in good time to develop

themselves and develop staff in the institution. Digital skills (Laar, Deursen, Dijk, Haan, 2017) play an important role in meeting the skills and skills required by the 21st century. Rapid technological development is an instrument that makes everyday access, access to information, ease work and reduce workload, work is done qualitatively. Self-made cars, drones, virtual help delivery, software translations, training by robots will replace people who are now doing these jobs: scanners are gradually replacing cashiers in supermarkets (Sousa, Rocha, 2019). Therefore, digital skills play an important role in the 21st century, the skills of working and adapting to new technologies in order to be able to work productively and enrich the knowledge of workers with technology capabilities (Ahmad et al., 2013). Digital competences covered information management, cooperation, communication, sharing, knowledge, ethics and responsibility, evaluation and problem solving, technical operations. (Ferrari, 2012).



Source: prepared by the authors, on the basis of the acquired survey data.

Fig. 1. **Future Competencies**

Digital skills are something more than an ability to use digital sources effectively (Eshet-Alkalai, 2004). The Internet, as a resource, is unfettered, has improved quality, is able to work remotely, there is great data availability, the ability to obtain all the necessary, interested and up-to-date information. The field of information technology increasingly facilitates human learning and the use of new technology capabilities, and people are no longer able to imagine life without the Internet and modern technologies, but it is distancing people from interpersonal contact. As well, a new generation is increasingly typical of “living” in an Internet environment without interesting in what is happening around, for example, instead of playing games in a school backyard, everyone is currently sitting on their own mobile devices, thereby closing themselves out of reality. In any public place, one can see when people “live” in the Internet world and

use the new technologies, forgetting what's going on around them. People need to be able to work not only with information technology, but also with people. People are not yet aware of the consequences that technological development may have on our skills, but the fact that technology is moving away from work and the desire to work physically hard will gradually come into contact. One cannot escape when the world's technologies of vital competence in life and work are disappearing, there is a possibility that people will no longer be able to communicate, work and work together on a team in the future, because the vast supply of technology and the Internet is remote and losing their skills to work on a team.

“The majority of Latvian residents, or 86%, believe that they live in a digitally developed environment and modern technologies play an important role in improving the quality of life of each person” (Latvian residents believe they live in a digitally developed environment, 2018). The development of staff is therefore becoming more and more important today. Various training, mentoring, career development programmes, recruitment – not only financial bonuses, but also awards and team matching – are provided for the development of public administration personnel. In the LDDK survey, 96% of respondents pointed out that increasing the qualifications and continuing training of employees are very important (Latvian Employers' Confederation, 2016). The State Chancellery in 2016 implemented the European Social Fund project “The High Level Leaders Development Programme”, aimed at developing the competences of senior leaders and strengthening leadership skills. Leaders should regularly develop their competences and create a good idea for subordinates that the learning process leads to the development of human competencies. National regulatory authorities are interested in developing the skills of employees, which is an essential condition for quality performance. But in order to objectively assess the competencies of employees, it is necessary to invest heavily because each employee must be assessed individually, whose competencies are linked to the duties of office. There are approximately 3300 people working in ministries (Public administration needs to change – fewer employees will not yet improve their effectiveness, 2018), which makes it difficult to control each employee individually and even to assess objectively. The assessment of the performance of employees as such is based on a subjective assessment, since it is possible to begin to assess human personality rather than professionalism in the evaluation process. It is a small border that can be easily breached, so one must be able to work by oneself and develop skills in the assessment of employees.

Knowledge is of great importance today, as are personal and professional competencies (Alvesson, 2004). In order to ensure the development of competence, financial resources are needed to ensure that institutions provide employees with training courses or seminars to increase their qualifications. The management of the Authority should be interested in working with qualified and knowledgeable specialists. The development of the competence of employees of the State

Administration shall be the responsibility of the management of each institution which took care of the satisfaction of the employees, the raising of qualifications, the development of competence. In order to ensure that the employees of the institution are satisfied and successful in achieving the objectives and tasks pursued by the Authority, it is necessary for each employee to determine on an individual basis the training needs to be carried.

In 2018, a survey was conducted at the public administration where 119 correct questionnaires were received from 150 planned questionnaires. The purpose of the questionnaire was to clarify the competencies required for public administration employees and how the development of competence is assessed. In view of the increasing focus of compliance competence, it was clarified in which processes the assessment of competence was carried out, 82% of employees think that the workplace is subject to regular staff assessment, while 11% of employees consider it to be in recruitment, recruitment or promotion, while 6% are planning training, 1% and change in pay but 1% not informed (see Table 1).

Table 1

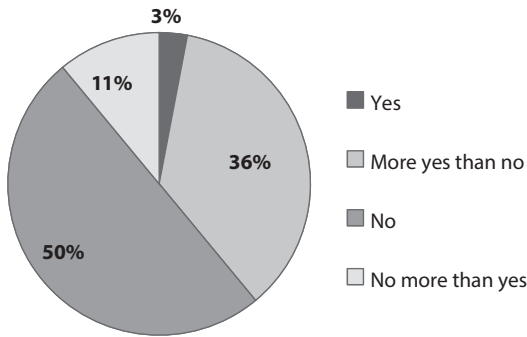
Determination of competence at work

| In which personnel management processes will your competence at work be determined/evaluated? | Result % |
|---|----------|
| Recruitment: recruitment or recruitment | 11% |
| Regular staff assessment is carried out at the workplace | 82% |
| Planning worker training | 6% |
| Changing the size of the rewards | 1% |
| I don't know, I'm not aware of personnel management processes | 0% |

Source: prepared by the authors, on the basis of the acquired survey data.

The assessment of competence shall take place in any process, including the annual evaluation of the performance of the work of employees, which shall assess whether employees need to develop knowledge and what competencies need to be improved. Today, more and more people are seeking to use new technologies to reduce administrative burdens, so the need for new knowledge, new skills and development orientation is becoming increasingly necessary. But knowledge acquired through training depends on human attitudes and expectations, for example, it was found during the study that more than half did not use the learning knowledge at work (see Figure 2). In principle, there are a number of reasons why the acquired knowledge and skills are not used at work:

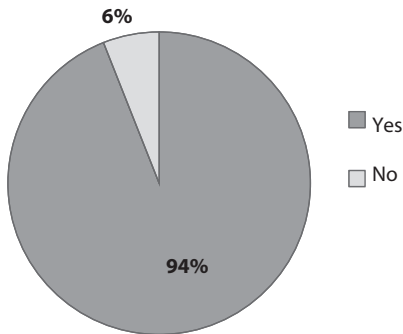
- possible training which is not closely related to the speciality;
- create new training programmes in line with today's requirements;
- learning knowledge and skills depends on the expectations and interests of the employee – attitudes.



Source: prepared by the authors, on the basis of the acquired survey data.

Fig. 2. **Do you use knowledge and skills in the learning process at work?**

The experience of human work plays an important role when recruiting, not only demands for work experience, skills, but also acquired education are raised. At the time of removal, it was established whether job experience was needed in the candidature, then 94% replied that it was necessary, but only 6% believed it was not necessary (see Figure 3).



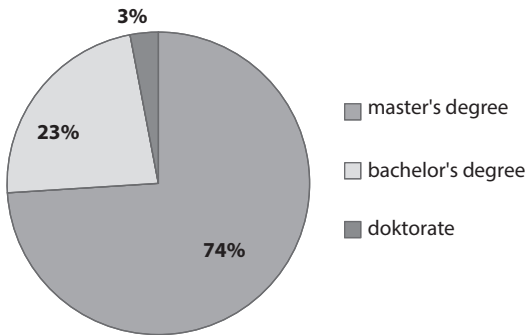
Source: prepared by the authors, on the basis of the acquired survey data.

Fig. 3. **Is there a need for experience in canvassing for a specific post?**

Human working experience plays a key role when recruiting a worker is important in the experience of work, education, expertise in a particular specialty, language knowledge, skills to work with computer programs and systems, language knowledge. For example, all those surveyed consider that there is a need for experience in a particular sector or field in which the institution operates. Of course, it is not always possible to rely on the education and experience gained, so it is good to organise interviews that need to be critical, and to find out the specific issues and whether a person as a personality will be relevant to that post.

In the questionnaire process, it was found that knowledge, acquired education and experience played a key role in the work, as 74% pointed out that it was

important for the public administration to have a master's degree. 23% believe that bachelor's degree and 3% doctoral education are sufficient (see Figure 4).



Source: prepared by the authors, on the basis of the acquired survey data.

Fig. 4. **How does education be required when working in public administration?**

As part of the questionnaire, the authors found what the five key competences are, which need to be further developed today:

- 1) communication and cooperation skills;
- 2) management skills;
- 3) creative thinking;
- 4) digital skills;
- 5) flexibility.

Communication and cooperation skills are first to show that people still have important interpersonal relations in the working process. Then, of course, leadership demands, creative thinking, and only a fourth place is digital literacy. This means that people are gradually moving towards the need to develop digital skills to match today's trends. Although there is virtually no need for digital skills in public administrations because of computer and document work. But using the new technology capabilities puts pressure on the circulation of electronic documents, with the aim of minimising the circulation of a paper document or abandoning it entirely, ensuring that documents are archived under pressure of one button. Therefore, it cannot be argued that there is no change in public administration. Similarly, conferences and seminars on artificial intelligence underpinning digital skills are increasingly being organised. But the fifth place ranks the skill of being flexible, adapting to any situation. In the 21st century, it is important that a person is in continuous development, learning the opportunities of new technology that would facilitate the work process, such as digital skills, as an assistant to each employee's major responsibilities, and which is one of the skills required by the 21st century, will of course be even more demanding in the future. But developing skills is not only to improve the work process but to improve personal and professional growth.

Training aims to provide the necessary expertise to build or refresh skills to organise work, to improve the level of skills and competences, to promote positive communication between staff, assessment of stress situations, identification of business growth opportunities, development for success and the development and identification of new competences. It is therefore important to develop competences on a regular basis, to be open to innovation and not to stop oneself with skills that are today outdated, typical for older people. For example, if a foreign language has not been used for some time, then without even knowing it, the person is forgetting it gradually. In order not to happen, it should be used regularly when communicating, reading, learning, or writing. But there must be a desire to maintain or improve skills, so they will not disappear. And today, the rapid development of technology forces the regular development of expertise.

CONCLUSIONS, PROPOSALS

On the basis of the literature analysis and the study carried out, it is concluded that:

1. Educational institutions which provide training for employees of a State institution shall be familiar with the objectives of the activities of these institutions and the necessary competencies of the employees for the purposes of the development system. It would then be easier to offer development training programmes to employees.
2. Human competence is formed in the family, in the environment in which people live, affects friends or acquaintances, personal interests, educational and life objectives acquired. Skills needs to be developed throughout their lives by restoring and improving new skills, knowledge and skills in their profession, so 74% have indicated that there is an important degree in public administration, while 94% have indicated that work experience is important.
3. The rapid technological developments of the 21st century play a key role in the development of digital skills, which enhances the quality of work and facilitates the execution of complex works. But the work process places emphasis not only on digital skills, but on communication skills, leadership skills, creative thinking and flexibility, thus adapting to today's demand for future skills.

During the working period, the following proposals were put forward:

1. High attention must be paid to the self-motivation of drivers and to the need to learn new knowledge and to regularly take care of skills and inspire those who have succumbed to the development of skills and professional development. Not only to visit educational establishments and conferences for the development of competence, but to take advantage of the opportunity to learn in the digital environment.
2. It is important for the staff responsible of the institutions to regularly compile data and carry out an analysis to identify the usefulness of the learning process

and to identify what is needed to improve the training process and to motivate workers to improve their competencies.

3. In terms of today's global development, it should not be forgotten that the employee should regularly develop all the skills needed for work, rather than focusing solely on the need for the most advanced and popular skills of today, work with all personal and professional skills, so it is important to assess what training will be useful for the needs of work. There is also an important attitude towards new technologies and a desire to acquire new skills.

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