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SUSTAINABILITY IN SERVICE´S SECTOR: NEW TRENDS OF SUSTAINABILITY TOOLS AND POSITIONING OF SERVICES IN ECONOMY

The goal of sustainable development is to meet the needs of the present without compromising the ability of future generations to meet their own needs. As economies globalize, new opportunities to generate prosperity and quality of life are arising though trade, knowledge-sharing, and access to technology. The article is a part of current scientifics project at our department of marketing "VEGA No. 1/0951/12 Sustainability developments of subjects in the food chain at the condition of Slovak market." In our article we like to introduce you a term of sustainability in service´s sector, such an ecological tourism at Slovak market throught definition of sustainability and statistical methods used in prediction of chosen datas such as GDP in service´s sector, service export and import and total prediction of Slovak service´s economy.
Key words: *Service´s Sector, Sustainability, Ecological, Tourism, Linear trend model, Holt - Winters additive model, SAS*
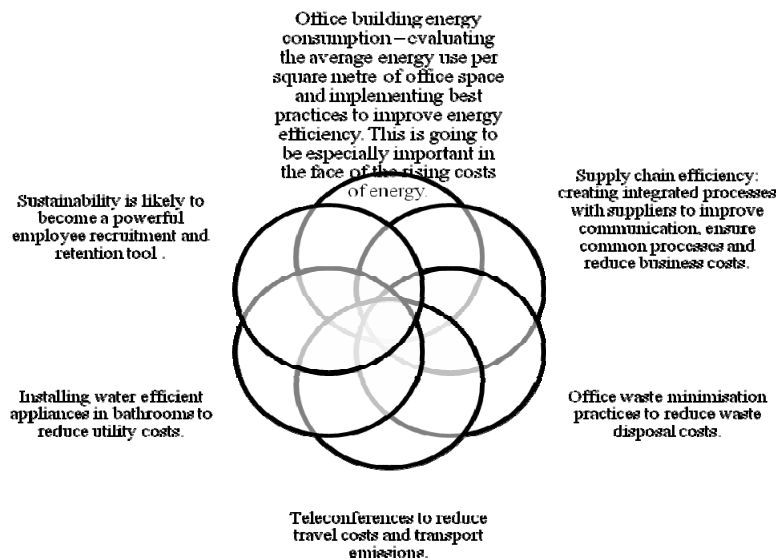
Introduction

The global market for environmental protection also represents a big opportunity for European firms. To help bring about a more competitive and more environmentally sound industry, we also need to move beyond consideration of products and traditional services and look more into innovative ways of organising production modes, cooperation and partnerships between businesses (e.g. green business models, industrial symbiosis). This paper considers the implications for sustainability of economy in services at Slovak market. The paper first discusses concepts of sustainability of external balance, which includes the measures of current account as a share of GDP and net capital flows as a share of the change in global wealth. The paper then considers the explaination of methodology and used methods which are all done in statistical program – SAS Enterprise Guide. We know that a sector of services is too wide and because for this paper, we target into tourism and because we will explain the position of sustainability in sector of Slovak tourism in current situation. Research shows that a more efficient service sector in an economy, coming in part from intensive use of information technology in services and in part from sustainability (e.g. green or environmenatally activities), or globalization of services, raises productivity and growth of the economy.

Environmentally and Sustainability Activities in Service´s Sector

Services are intrinsically people-intensive industries, relying on relatively less natural capital and more human capital than producing agricultural or industrial goods.[1] Another benefit of the growing service sector is that by using fewer natural resources than agriculture or industry, it puts less pressure on the local, regional, and global environment. Growth of the service sector will not, however, be a miracle solution to the problem of **sustainability** because agriculture and industry will always be necessary to meet the needs of the growing domestic and global population. Compared to agricultural and manufacturing companies, the service industry has little smokestack emissions to reduce, packaging to minimise or waste to dispose of. It's not uncommon for service based business owners to falsely believe that their business is too small or too service based to benefit from the rewards of **"greening"** their business. However, they can still benefit from business strategies to mitigate risks and capture new into their operations and business strategies that will ultimately affect profitability. [2] You can see on Figure 1, there´re many opportunities in business, how we can integrate eco-tools and sustainability tools also to the sector of services. The energy saving, powerfl employees, supply chain or water efficiency or at least the waste minimalization are only a piece of all marketing tools used in sustainability of service´s sector.

Figure 1. **Business opportunities by integrating eco-awareness and sustainability concepts in Service´s Sector**

Office building energy consumption – evaluating the average energy use per square metre of office space and implementing best practices to improve energy efficiency. This is going to be especially important in the face of the rising costs of energy.

Sustainability is likely to become a powerful employee recruitment and retention tool .

Supply chain efficiency: creating integrated processes with suppliers to improve communication, ensure common processes and reduce business costs.

Installing water efficient appliances in bathrooms to reduce utility costs.

Office waste minimisation practices to reduce waste disposal costs.

Teleconferences to reduce travel costs and transport emissions.

Source: own elaboration

By evaluating business risks through the lens of sustainability, small businesses are benefiting from the tangible and intangible rewards of **going green**:

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[1] Kretter, A a kol. *Marketing.* Slovenská poľnohospodárska univerzita, Nitra, 2010.
[2] MARIN, Lucian E. . *A new world: sustainability and the service sector.* [online], 2013.

- *Improve Business Reputation:* energy efficiency measures through lighting and heating/cooling systems.
- *Create Brand Differentiation:* high efficiency washers / dryers for laundry
- *Capture Industry Synergies* with other Sustainable Businesses
- *Reduce Business Cost:* energy and water conservation programs for clients of hotels / restaurants
- *Improve employee satisfaction and retention*
- *Lead your industry in best practices* and improved stakeholder engagement
- *Respond to Consumer Eco-Preferences:* greening of supply chain by addressing resource efficiencies of suppliers.

Companies becoming more **environmentally**, socially and economically responsible are driving innovations in sourcing, products, and services.[3] Commitment to **sustainability** uncovers opportunities to explore, develop, collaborate, and innovate within business and industry. So yes, service industries can benefit from **sustainability** too.[4]

Ecological Tourism in Slovakia

Ecotourism helps planners, developers and entrepreneurs to evaluate the potential and prepare realistic business plans for **ecotourism** and alternative energy projects. In selected instances, the company also helps identify and recruit investors as well as potentially exchanging its services for equity participation in projects. In order to assist its clients, the company provides:

- market assessments
- feasibility studies
- business plans
- investment proposals
- policy analyses[5]

Basic definition of **ecotourism** is *"Responsible travel to natural areas that conserves the environment and improves the welfare of local people".*[6] Ecotourism was strarting in 1990s, and it has been growing 20 - 34% per year. Nature tourism is growing at 10 - 12% per annum in the international market. Experiential tourism, which encompasses ecotourism, nature, heritage, cultural, and soft adventure tourism, as well as sub-sectors such as rural and community tourism is among the sectors expected to grow most quickly over the next two decades. Sustainable tourism could grow to 25% of the world's travel market within 6 years, taking the value of the sector to 473, 6 bil. $ (362, 86 bil. €) a year.

In daily life, it´s practised many types of **EcoTourism** (see Figure 2), with many differences in business and marketing goals but the priorities of all them are same – to save our environment, to be more „green", use sustainability in their business such an

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[3] MEHL, Horst – HORSKÁ, Elena. *Sustainable farming and new perspectives for the farmer as energy-manager for power-supply from biogas-reactor coupled with CHP.* In: Roczniki ekonomii rolnictwa i rozvoju obszarów wiejskich, s. 77-84. 2012.
[4] URLAUB, Julie . *Can Service Industries Benefit from Sustainability?* [online], 2011.
[5] WILSON, Alan. *Services Marketing - Eco Tourism International.* McGraw-Hill, Berkshire, 2008.
[6] ŠČEPKOVÁ, Eva. Ekologický cestovný ruch na Slovensku. Media ST s.r.o., Žilina, 2013.

education or buying the safety components.[7] Profile of **Ecotourists** in Europe is divided into several groups:

- Experienced travelers
- Higher education: global education as an important part of eco-tourism stresses the International Union for Conservation of Nature. Eco-tourism is carried out in protected areas with undisturbed natural environment. As we research in project VEGA
- Higher income bracket
- Age: middle-age to elderly
- Opinion leaders
- Ask/ tell their friends and colleagues about trip.[8]

Figure 2. **Typology of EcoTourism**

Category	Definition
Adventure tourism	A form of nature-based tourism that incorporates an element of risk, higher levels of physical exertion, and the need for specialized skill.
Ecotourism	Responsible travel to natural areas that conserves the environment and improves the welfare of local people.
Geotourism	Tourism that sustains or enhances the geographical character of a place-its environment, heritage, aesthetics, culture, andthe well-being of its residents.
Mass tourism	Large-scale tourism typically associated with 'sea, sand, sun' resorts and characteristics such as transnational ownership, minimal direct economic benefit to destination communities, seasonality, and package tours.
Nature-based tourism	Any form of tourism that relies primarily on the natural environment for its attractions or settings.
Pro-poor tourism	Tourism that results in increased net benefit for the poor people.
Responsible tourism	Tourism that maximizes the benefits to local communities minimizes negative social or environmental impacts, and helpslocal people conserve fragile cultures, habitats, and species.
Sustainable Tourism	Tourism that meets the needs of present tourist andhost regions while protecting and enhancing opportunities for the future

Source: Global Ecotourism, Updated edition. 2006. Research supported by Canopy Development. [Online]

Metodology

We used two metodology approaches for prediction:

- **Linear trend with seasonal terms:** given as Series G in Box and Jenkins (1976), is often used in time series literature as an example of a nonstationary seasonal time series. This series is a quarterly series. It also exhibits an increase in variability around the trend. In this example this series is modeled using an unobserved component model called the basic structural model (BSM). The BSM models a time series as a sum of three stochastic components: a trend component μ_1, a seasonal component γ_t, and random error ε_t. Formally, a BSM for a response series y_t can be described as:

$$y_t = \mu_{1+} \gamma_t + \varepsilon_t$$

[7] LUŠŇÁKOVÁ, Zuzana – KLEINOVÁ, Katarína. *The place of corporate social responsibility and its activities in the retail firm management*. In: Polityki europejskie, Warsaw, pg. 53-61. 2012.
[8] GLOBAL ECOTOURISM, Updated edition. [online] 2006.

Each of the stochastic components in the model is modeled separately. The random error ε_t, also called the irregular component, is modeled simply as a sequence of independent, identically distributed (i.i.d.) zero-mean Gaussian random variables. The trend and the seasonal components can be modeled in a few different ways. The model for trend used here is called a locally linear time trend. This trend model can be written as follows:

$$\mu_t = \mu_{t-1} + \beta_{t-1} + \eta_t, \quad \eta_t \sim i.i.d. \; N(0, \sigma_\eta^2)$$
$$\beta_t = \beta_{t-1} + \xi_t, \quad \xi_t \sim i.i.d. \; N(0, \sigma_\xi^2)$$

These equations specify a trend where the level μ_t as well as the slope β_t is allowed to vary over time. This variation in slope and level is governed by the variances of the disturbance terms η_t and ξ_t in their respective equations. Some interesting special cases of this model arise when you manipulate these disturbance variances. For example, if the variance of ξ_t is zero, the slope will be constant (equal to β_0); if the variance of η_t is also zero, μ_t will be a deterministic trend given by the line $\mu_0 + \beta_0 t$. The seasonal model used in this example is called a trigonometric seasonal. The stochastic equations governing a trigonometric seasonal are explained later (see the section Modeling Seasons). However, it is interesting to note here that this seasonal model reduces to the familiar regression with deterministic seasonal dummies if the variance of the disturbance terms in its equations is equal to zero. The following statements specify a BSM with these three components:

> *proc ucm data=seriesG;*
> *id date interval=month;*
> *model logair;*
> *irregular;*
> *level;*
> *slope;*
> *season length=12 type=trig print=smooth;*
> *estimate;*
> *forecast lead=24 print=decomp;*
> *run;*

- **Holt - Winters additive model:** Holt (1957) and Winters (1960) extended Holt's method to capture seasonality. The Holt-Winters seasonal method comprises the forecast equation and three smoothing equations — one for the level l_t, one for trend b_t, and one for the seasonal component denoted by , with smoothing parameters s_t, α, β and γ. We use m to denote the period of the seasonality, i.e., the number of seasons in a year. For example, for quarterly data m=4, and for monthly data m=12.

There are two variations to this method that differ in the nature of the seasonal component. The additive method is preferred when the seasonal variations are roughly constant through the series, while the multiplicative method is preferred when the seasonal variations are changing proportional to the level of the series. With the additive method, the seasonal component is expressed in absolute terms in the scale of the observed series, and in the level equation the series is seasonally adjusted by subtracting the seasonal component. Within each year the seasonal component will add up to approximately zero. With the multiplicative method, the seasonal component is expressed in relative terms
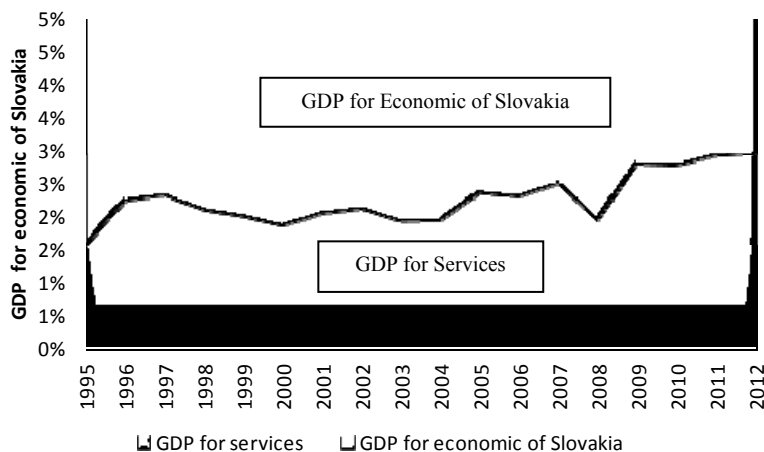
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(percentages) and the series is seasonally adjusted by dividing through by the seasonal component. Within each year, the seasonal component will sum up to approximately.[9] Linear trend with seasonal terms and winters additive model was computed by using software SAS.

Results

The economics of ecotourism vs. mass tourism as we wrote before is in the last time increasing. 80% of money for all-inclusive package tours goes airlines, hotels, and other international companies. In 2012 and at the beginning of 2013, eco-lodges hire and purchase locally, and sometimes put as much as 95% of money into the local economy.The daily expenditure of cultural tourists (over 70€/ 90$US) is higher than visitors on a touring holiday (52€/ 67 US$), beach holiday (48€/ 62 US$) or rural trip.

We like to add some economic facts and figures, which show the position of services in Slovak economy and than we´ll, continue with analysis of tourism sector and impact of sustainability. As we can see (Figure 3) in Slovakia is GDP for services increasing.

Figure 3 **Share of total GDP (%) for services in Slovakia from 1995- up to 2012**
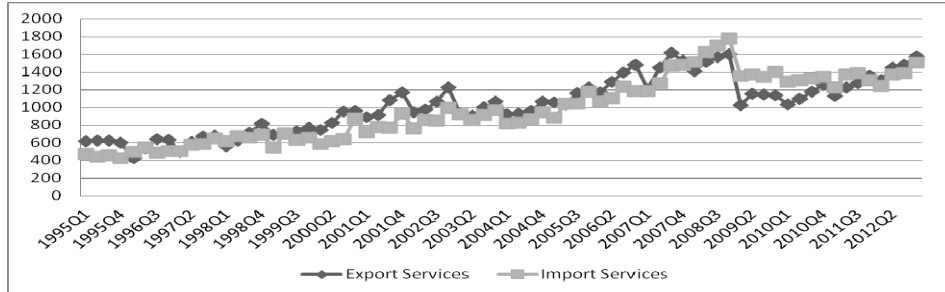

Source: own figure, datas from Statistic office of Slovakia, 2013

On next Figure 4, it´s nice to see the devolopment of export and import for services. We evaluated the years from 1995 to 2012. Many services are produced in countries where the safety and performance requirements of the importing country or region are not always fully understood. These requirements have been put into place to ensure the safety of importing countries consumers.

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[9] RUBLIKOVA, Eva. 2007. *Analýza časovych radov.*Bratislava, Iura Edition, , s.207, 2007.
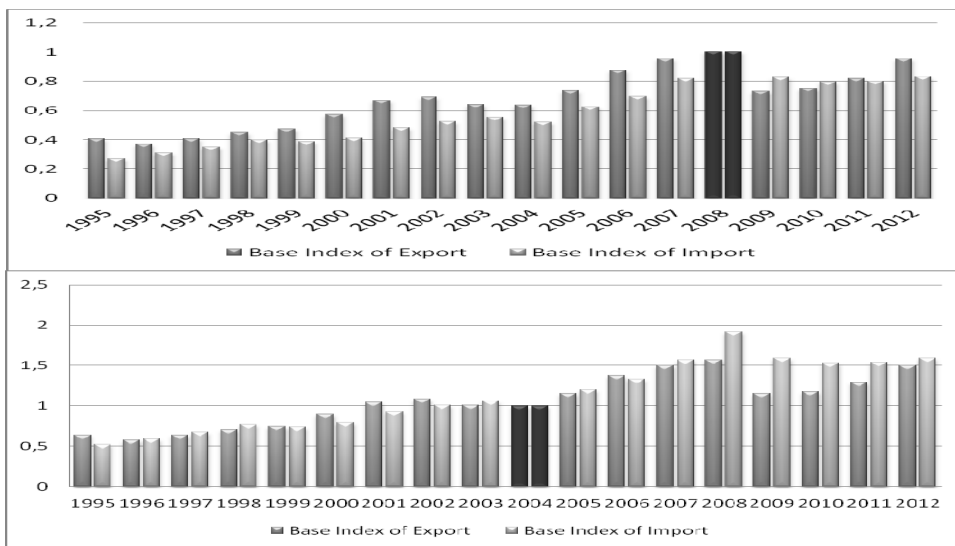
Figure 4. **Developing of Export and Import for Services since Q1 1995 till Q4 2012**

Source: own figure, datas from Statistic office of Slovakia, 2013

Base index compares values of services with the base term (Figure 5); we decided that base term will be year 2004- when Slovakia became member of the EU. Chart shows that export and import of services had lower level against 1995 till 2000. Situation was changed after 2000. After accepting Slovakia to the EU import of services was increasing till 2008. Since 2008 decreased import of services and is remained about 50% upper level with comparing level in 2004. Export of services had similar development. For better understanding we provide interpretation of base index export and import services.Followed we interest about situation if the base year will be 2008 – year of beginning economic crisis. To compare the development of export and import of services, we found that in the beginning of the crisis was the development of a growing trend. After the beginning of the crisis in 2008 (Figure 5), there was a decrease in the attenuation of exports and imports of services in the mil. € at current prices. The interpretive entries in the chart below, we will see graphically in all cover

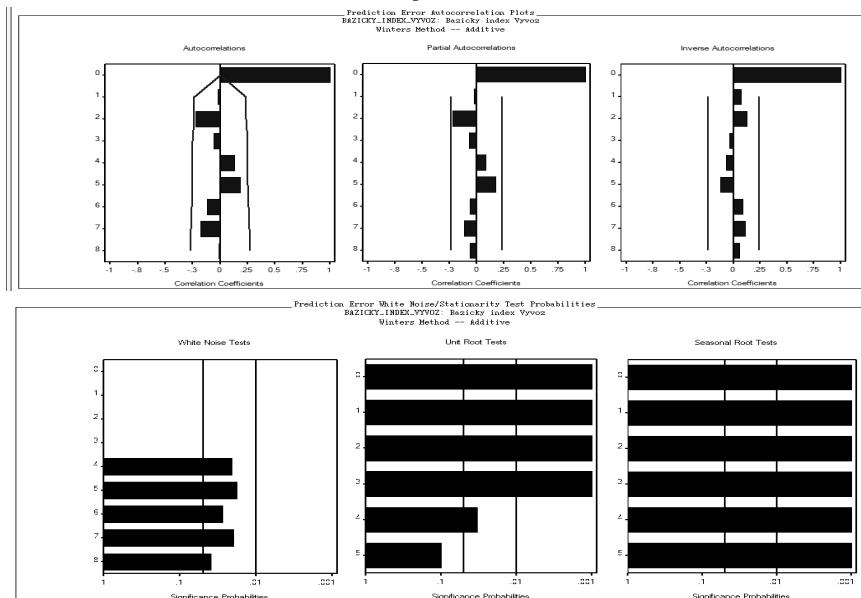Figure 5 **Base indexes of export and import for services in Slovakia (2004 and 2008=100)**

Source: own figure, datas from Statistic office of Slovakia, 2013

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a period of decline in percentage terms compared with 2008.It could be noted that the beginning of the crisis had a significant impact on the development of export and import services. Greater effect was recorded in accession to the EU. Subsequently we are interested in development of export and import services ex post. Due to quarterly data from 1995 to 2012, we decided to forecasts for quarter 4 of 2013. The following graph shows the autocorrelation coefficients that describe the rate of linear time-shifted residues. The graph on the y-axis is shown the time shift of one period and the x-axis are autocorrelation coefficients (take the value of -1 to 1), called the autocorrelation function (ACF).

Prediction of Export Services

Autocorrelation values should not exceed the specified interval; otherwise the selected model is not very suitable. The ACF chart, we can see that not a single factor does not. Graf PACF (partial autocorrelation function) tells how shifted correlation between variables adjusted for third (other) values lying between them. We see (Figure 6) that the partial autocorrelation coefficients exceeding the specified interval.
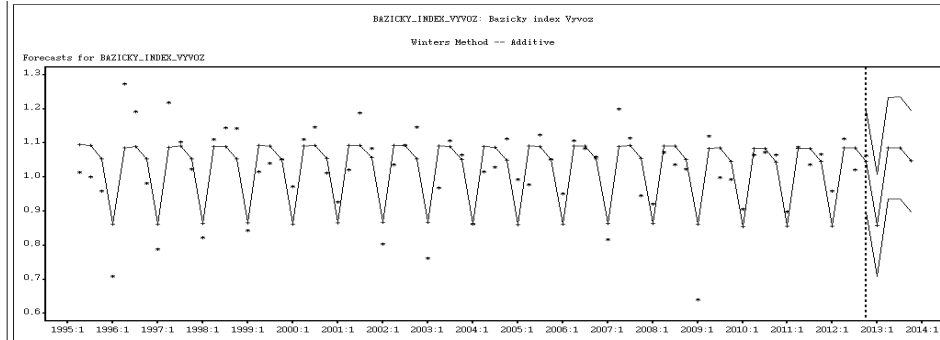
Figure 6 **Linear trends with seasonal terms of Export Prediction**

Source: own figure

Last but one major graphical tool evaluation model identification process is white noise (Figure 7), the presence of which indicates a violation of the conditions of zero mean, constant variance, and independence of residuals. If you would exceed the specified interval, accepts the alternative hypothesis testing failure hardener required properties. White noise from the graph we see that the values do not exceed the acceptance interval null hypothesis model thus fulfills the required conditions. The second graph is the Unit root test, which is used to verify the presence of a unit root. The

Figure 7. **Winters Methods of Export Prediction to 2014 year**

BAZICKY_INDEX_VYVOZ: Bazicky index Vyvoz

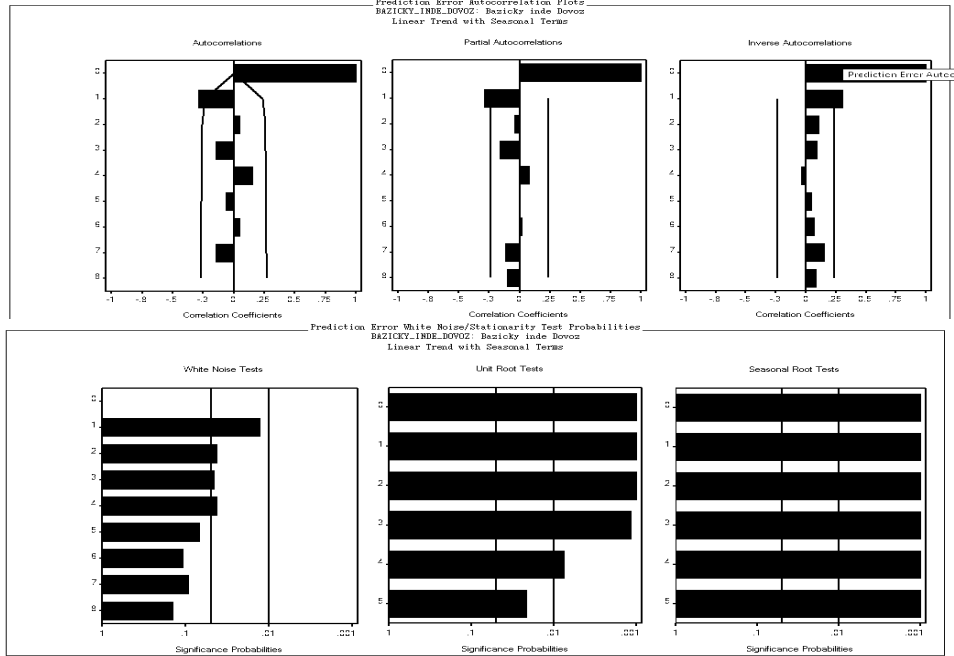Winters Method -- Additive

Source: own figure

unit root test chart, we see that do not reject the null hypothesis, ie the present model is a unit root, while the time series is not stationary. The last graph shows the prognosis. Because of the trend in the time series, forecasting has a similar shape as the previous period, ie a decrease, then increase. A service depends on the season.

Prediction of Import Services

The following Figure 10 shows the autocorrelation coefficients that describe the rate of linear time-shifted residues. The graph on the y-axis is shown the time shift of one period and the x-axis are autocorrelation coefficients (take the value of -1 to 1), called the autocorrelation function (ACF). Autocorrelation values should not exceed the specified interval; otherwise the selected model is not very suitable. The ACF chart, we can see that only one factor beyond. Graf PACF (partial autocorrelation function), see Figure 8 tells how shifted correlation between variables adjusted for third (other) values lying between them. We see that the partial autocorrelation coefficients exceed specified interval to a minimum. Important graphical tool evaluation model identification process is white noise, which indicates the presence of breaching the terms of a zero mean, constant variance, and independence of residuals
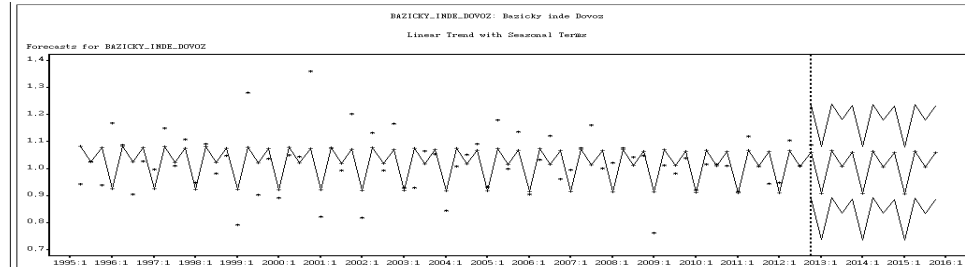
If you would exceed the specified interval, accepts the alternative hypothesis testing failure hardener required properties. White noise from the graph we see that the values do not exceed the acceptance interval null hypothesis model thus fulfills the required conditions. The second graph (figure 9) is the Unit root test, which is used to verify the presence of a unit root. The unit root test chart, we see that Do not reject the null hypothesis, ie the present model is a unit root, while the time series is not stationary. The last graph shows the prognosis. Because of the trend in the time series, forecasting has a similar shape as the previous period, ie a decrease, then increase. A service depends on the season.

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Figure 8 **Linear trends with seasonal terms of Import Prediction**

Source: own figure

Figure 9 **Winters Methods of Import Prediction to 2014 year**

Source: own figure

Conclusion

It could be noted that the beginning of the crisis had a significant impact on the development of export and import services.Greater effect was recorded in accession to the EU. We confirmed hypothesis that services depends on the season.

- The strengths of the eco-tourism potential of natural features, business awareness, management of tourism agency of Slovakia and local communities about the importance of environmental protection and the environmental awareness of consumers.

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- Ignorance of people about eco-tourism and a lack of environmental education in the state is also the infrastructure of tourism outweighing the short-term visitors. Tourism can not be controlled - does not select an input.
- In marketing recommended to identify target groups, create packages and more effective promotion.
- Among target groups ecotourism include cyclists, wildlife enthusiasts, eco-tourist, families, groups and seniors Environmental Education.
- For ecotourism is characterized by preservation of the environment, environmental sustainability, effects on local populations, exploring local culture and not least, educating visitors.
- GDP for service in Slovakia is still growing, from 2000 year (587, 66 mil. €) up to 2 175, 75 mil. € in 2012 year.
- Developing of Export and Import for Services since Q1 1995 till Q4 2012: Service export was in 2012 in 1576, 026 mil. €, what´s increasing prognosis in the comparison of the year 2000 in 961, 3 mil. €. Between the years 2000-2004 was observed the fluctuation of export services. On opposite side, an import of service in 876, 84 mil. € at the end of 2000 year (quite closet to export), than in 2012 was import of service in 1504,803 mil. €.
- Because of global financial crisis in 2008, we compared the share of services in 2004 and 2008; we found that in the beginning of the crisis was the development of a growing trend. After the beginning of the crisis in 2008 (Figure 5), there was a decrease in the attenuation of exports and imports of services in the mill. € at current prices.
- At last we done the prediction of export and import of Services for the year 2014 by linear trend model; the prognosis made by Holt - Winters additive model. Because of the trend in the time series, forecasting has a similar shape as the previous period, i.e. a decrease, then increase. A service depends on the season.

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Summary

Discussion of sustainability efforts in the marketplace often revolves around the manufacturing sector. With so much variability in the service industry, it is difficult to provide one-size-fits-all recommendations on how to make a workplace eco-friendly. In our article, we decsribed many tips which are used in the service´s sustainability. Initiating recycling programs, turning off lights after hours, eco-friendly hotels opening and shutting down equipment when not in use are among the immediate measures that can be implemented. Among the benefits of going green are the potential marketing opportunities. After theoretical facts and figures about sustainability and environmentally policy in sector of services we evaluated the economics datas, as well as an image the position of services in Slovak economy. In our statistical research we used two models: Linear trend model, Holt - Winters additive model done in SAS program. First one is often used in time series literature as an example of a nonstationary seasonal time series and the second, comprises the forecast equation and three smoothing equations — one for the level l_t, one for trend b_t, and one for the seasonal component. So firms should share news of their sustainability successes with suppliers, customers and clients both through traditional avenues and social media networks.

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