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Contents

PREFACE

This issue of Apstract contains interesting paper on various topics and from various places in the world.

Four papers are written by colleagues from Africa., two from Nigeria and one from Ghana, respectively Egypt All five papers relate to agriculture. . One deals with the impact of terrorism on agricultural production in Nigeria, whereas the second one makes an analysis of quality assurance for export commodities. A third paper from Nigeria is on the effect of training on entrepreneurial performance. The Ghana paper relates to the effect of training on small scale rice production in Northern Ghana, whereas topic of the paper from Egypt is on the profitability of sweet pepper production under different irrigation levels.

Four papers from different countries tackle issues in the field of recreation and tourism. The impact of an ageing society on the tourist development if a Japanese island is the topic of one paper in this field.. Corporate social responsibility in Jordanese football is discussed in another paper, whereas one paper from Hungary is answering the question whether digital technologies are changing sport, and in another one the author presents an analysis of the opinion of visitors of Esterhazy castle.

Two other papers from Hungarian scholars discuss the success of high school IT education and another one pays attention to trends on demand and supply of fertilizers in Hungary.

Three papers discuss societal issues at the macro level. A quantitative assessment of the rurality and an efficiency analysis of emigration in Romania is the topic of one paper, whereas in another one risk of several commodity indices is compared to the LIBOR. An extension of existing discourses on the economic performance of the German agri-food businesses is the subject of a third paper in this field.

Wageningen April 2019

Johan A.C. van Ophem

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SCIENTIFIC PAPER

TRENDS ON THE ARTIFICIAL FERTILIZER MARKET AND IN FERTILIZERS USE IN HUNGARY

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Abstract: *The fertilizer market in Hungary is rather concentrated, which has a strong influence on the price of the fertilizer. Our domestic fertilizer use is primarily determined by that of nitrogen. The use of phosphorus is also significant but the trends in the use of potassium do not match the total quantities applied in individual years. Consequently, it can be concluded that the majority of farmers still focus on the application of nitrogen and also apply phosphorus but either neglect or do not pay enough attention to potassium fertilization. The changes in fertilizer prices between 2006 and 2017 can be broken down into two periods. Until 2012 a very important and dynamic increase was observed as a result of which the prices of N, P and K fertilizers increased by 80-120%, 160% and about 120%, respectively. This was followed by a downturn in the market and in relation to 2012 prices there were 20-30/ decreases experienced until 2017 but the rate of this lagged behind the prices in other European countries. Owing to this trend the prices of N, P and K have increased by 60%, 100% and 80%, respectively, over the past ten years. The correlation between fertilizer application and the prices of fertilizers in any given year is low but there is a positive one observed between fertilizer application and the fertilizer prices in the preceding year. This means supposedly that farmers mostly buy the fertilizers they wish to apply not in the current but in the preceding year and store them until these are applied. There is a strong correlation seen between fertilizer prices and the prices of corn and wheat, which means that fertilizer traders also keep tabs on economic results and also increase fertilizer prices under the influence of higher prices. Furthermore, it can be claimed that there is no correlation between crude oil prices on the world market and domestic N fertilizer prices. This is an important factor since the primary base material of N fertilizers is natural gas and their production involves considerable energy costs as well. It can be seen, however, that this is not what determines our domestic fertilizer prices, which can be explained by the fact that the price calculations by the determining actors on the Hungarian fertilizer market is not based on costs but on the demand.*

Keywords: *Fertilizer Use, Fertilizer Prices, Fertilizer Trade*
(JEL Classification: *Q13*)

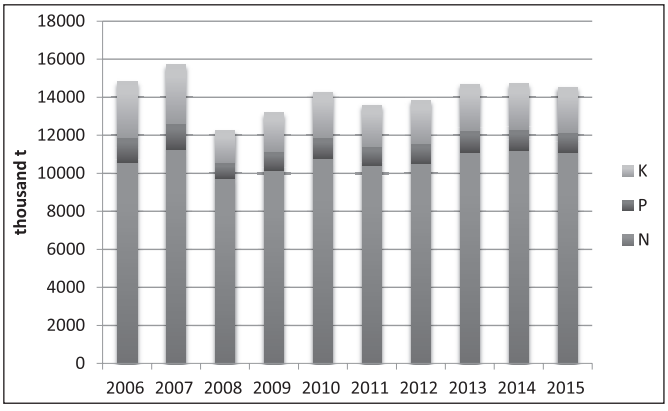
INTRODUCTION

About half of the world's crop production, food supply, foraging fibre and fuel supply is closely related to fertilizer use. According to the forecast by WHO the world's current population of 7.3 million will have increased to over nine million by the year 2050. As a result a further increase in the demand for food and feeds can be expected. In order to increase crop production it is essential to maintain a viable and efficient fertilizer application, which in turn means that an increase in fertilizer application is to be expected globally. This is also supported by a FAO study of 2015, which says that according to FAO data the fertilizer application of the world was 185 million tons effective matter in 2015. The volumes of N, P and K amounted to 112, 42 and 31 million tons, respectively. These values increased by about 2% despite the fact that they decreased owing to tense domestic interior conditions in Easter-Europe, and Central as well as Western-Asia, and because of decreasing crop buying up prices in North-America. Thus the increase was the result of the increases in Africa, Oceania, Eastern and Southern-Asia as well as Latin-America. According to forecasts the annual growth of 1-2% is to continue and so the application will have reached 200 million tons by 2020.

Fertilizer application in the EU has decreased to one third over the past thirty years. The lowest point was in 2010 and there has been a slight increase experienced ever since.

The total mineral fertilizer application in the EU member states in 2015 – based on the data of Fertilizers Europe – was 11, 1.1 and 2.4 million tons N, P and K fertilizers, respectively (Figure 1).

Figure 1: Agricultural uses of N, P and K fertilizers between 2006 and 2015



Source: private compilation on the basis of data by Fertilizers Europe 2017

The series of data well illustrates the decrease in 2008, the two reasons of which were the economic recession and the increases in fertilizer prices due to increases in fuel prices. By 2015 there was an increase again and fertilizer utilization reached the level for 2006. Current prospects and the increases in cultivated land areas indicate that further increases can be expected. These increases, however, are expected to be considerably different in individual regions of the EU. In EU-15 state and primarily in Germany considerable decreases are expected resulting from the Nitrogen regulation and as regards N, P and K applications, decreases of 35%, 50% and about 30% are calculated with, respectively. In France, Finland and the Netherlands decreases of about 10% are expected, respectively. In the East- and Central-European region, however, considerable increases are envisaged and as a result of soars in Potassium application increases of up to 50% are expected in Bulgaria, the Czech Republic and Romania. In Hungary increases of 20%, 15% and 10% are expected in N, P and K applications, respectively. Considering all the above together a decrease of 5% in N application and increases of 0.7% and 1.8% increases in P and K, respectively, are forecast by 2026 (Fertilizers Europe, 2017).

Fertilizer application in Hungary shows an increasing trend although its average volume lags behind either the world or the EU average.

MATERIALS AND METHODOLOGY

In preparing the current study my general objective was the analyze of fertilizer application in Hungary over the past ten-year period and finding as well as investigating individual factors that influence the application. My special, general objective-related goals serve the purpose of providing scientifically based answers to the questions emerging in relation to the investigation.

My questions relating to the topic are the trend(s) can be observed in fertilizer application and prices in Hungary over the past decade. The prices of natural gas and crude oil's influence domestic fertilizer prices. I looked for answers the influence the given price if use of fertilizers. And the correlation between the NPK use and some potential effect factor such as yields, weather anomalies. Then I examined how can the domestic fertilizer application and prices be characterized with the help of different indicators?

In order to answer the questions I started by analyzing the available domestic and international databases and searched the illustrative world, EU and Hungarian fertilizer utilization and trade figures in secondary data collection. Next, an analysis with SPSS software of the database, which included 10 years' (2006-2015) data on the fertilizer market and agricultural crop production, compiled followed. The data lead to the calculation of partial efficiency indicators, with the help of which conclusions can be drawn on the domestic condition. In the analyses többlet space of the trends I used Excel software. Following the individual analyses correlation analyses between the domestic fertilizer utilization and other factors were carried out, such as:

- fertilizer prices in the given year
- fertilizer prices in the previous year
- corn and wheat prices in the previous year
- corn and wheat yields in the previous year
- corn and wheat average yields in the given year
- shaping of whether conditions in the given year
- crude oil prices on the world market
- natural gas prices on the world market

My research hypotheses were as follows:

1. Fertilizer prices show a continuous increase in Hungary also in the case of N, P and K fertilizers.
2. Increases in fertilizer prices considerably influence the volumes applied, the more expensive the given fertilizer is, the less of it will farmers apply.
3. Fertilizer application has a considerable bearing on the management results of the previous year, i.e., in case produce selling prices are higher, higher volumes of fertilizers will be applied in the next year.
4. Owing to the concentrated fertilizer market the price calculation is not cost-based, i.e., changes in the determinant crude oil and natural gas prices are not observed by the domestic fertilizer producers.

RESULTS AND DISCUSSION

Artificial fertilizer production in Hungary

Fertilizer production in Hungary is rather concentrated and a total of twelve producers cover 80% of the whole market (Varga, 2012). The domestic plants are owned by Nitrogénművek Co. and found in Pét and Szolnok. Peremartoni Fertilizers Producter Ltd. is located in Peremarton. The market leader is Nitrogénművek Co.. The total capacity of the Hungarian firms is some 1 900 000 tons and 90% of this is produced by the market leader.

Fertilizer trade

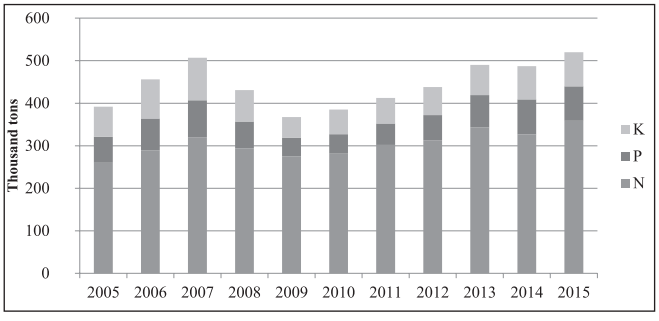
Hungary has a supply market of artificial fertilizers. 80% of the fertilizer sales in Hungary are done by 12 companies. Half of the volume produced by the companies are sold to their

domestic markets but they also produce for export to countries within the logistically economic about 600 km range. As a result, side by side with the domestically produced fertilizers import fertilizers are also present on the Hungarian Market.

According to Vágó et al. (2016) 50% of the fertilizers sold in Hungary comes from domestic producers and 50% is imported. The total volume of imported fertilizers reaches farmers via traders and the overwhelming majority of domestic fertilizers also gets to farmers via dealers. The volume that gets to farmers directly from the producer is about 10%.

The volume of the domestic fertilizer production between 2005 and 2015 is illustrated by Figure 2.

Figure 2: The volume of fertilizers in effective matter sold in Hungary between 2000 and 2015



Source: HCSO , 2016

Considered in natural mass 1.489 million tons of fertilizers were sold directly to farmers, of which 1.142 million tons were single component fertilizers and 347 thousand tons were complex ones. The ratio of single component and complex fertilizers was 75:25 in 2015, i.e., there are no significant changes (KSH, 2016).

As regards the utilization of nitrogen fertilizers it is worth noting that wing to its safety hazard (it was declared explosive) the volume of the earlier dominating ammonium nitrate decreased considerably and farmers use Calcium Ammonium Nitrate (CAN) to replace it.

The value of the fertilizers sold is illustrated by *(Table 1)*

As it is seen in the Table 1., simple fertilizers accounted for 60-70% of the ones sold over the period analyzed and within this nitrogen fertilizers had a share of 90-95%.

Even in this case, what strikes the eyes is the volume increased due to the price explosion of 2008, which due to a decrease of up to 20%, exceeded the volume of 2006 by about 70%. Although this decreased somewhat in 2009, later, within six years doubled as a result of continuous increases and had risen to the level of 220%, i.e., HUF 136.5 billion by 2015.

Trends in fertilizer prices and the most important factors which influencing them

The price indices for fertilizers are shown in Table 2

Table 2 shows the changes in domestic fertilizer prices compared to those in 2005. All in all it can be claimed that the changes in fertilizer prices can be divided into two periods. Until 2012 there had been a very significant and dynamic change as a result of which the prices for N, P and K fertilizers went up by 80-120%, nearly 160% and about 120%, respectively. This was followed by a recovery of the market and until 2017 decreases of about 20-30% can be observed compared to 2012 prices but the rate of these changes lag behind the prices in other European countries.

Table 2: Price indices for artificial fertilizers on the basis of 2005 (=100%).

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
N fertilizers	100,0	117,3	126,7	185,4	164,6	154,1	194,9	213,7	206,5	204,5	207,2	179,7
P fertilizers	100,0	99,0	118,5	250,2	231,5	193,1	231,5	251,2	254,8	230,5	227,4	229,7
K fertilizers	100,0	111,3	111,9	248,8	279,0	198,4	231,5	258,5	250,0	216,9	226,0	210,5
NPK fertilizers	100,0	108,2	119,9	228,8	207,5	171,5	206,9	243,1	227,8	204,8	215,3	202,1
Fertilizers total	100,0	114,4	124,7	201,5	180,5	161,3	200,6	223,9	214,7	206,3	211,6	187,9

Source: HCSO, 2017

Table 1: The development of fertilizer sales in value over 2006–2015

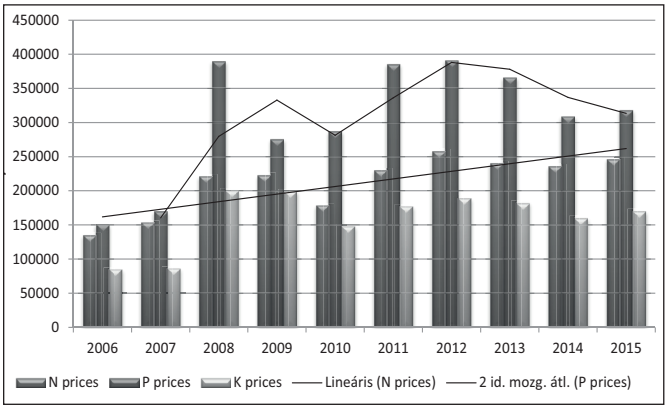
HUF million

Item name	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Simple fertilizers total	40 374	47 655	64 516	59 880	51 539	70 446	77 753	85 919	78 836	89 208
of which: Nitrogen	36 360	43 781	59 030	56 566	48 326	66 948	73 534	81 279	74 570	84 651
Phosphorus	714	433	318	125	255	378	349	290	206	314
Potassium	3 299	3 441	5 167	3 190	2 958	3 120	3 871	4 351	4 060	4 243
Complex fertilizers total	22 067	28 859	40 966	22 154	22 504	34 665	44 302	43 233	42 550	45 465
NPK fertilizers total	62 440	76 514	105482	82 034	74 043	105111	122055	129 152	121 386	134 673
Other, non-NPK fertilizers	n.a	n.a	1 643	1 397	1 487	802	1 085	1171	1 113	1 793
Fertilizer sales total	62 440	76 514	107125	83 431	75 530	105912	123140	130 322	122 499	136 466
Change (%)	100,00	122,54	171,56	133,62	120,96	169,62	197,21	208,72	196,19	218,56

Source: Research Institute of Agricultural Economics, 2017

Later an analysis of the trends in fertilizer prices between 2006 and 2015 followed (Figure 3). In each case the prices were proof-corrected to effective matter contents of 100%. The average prices for the most popular and wide-spread fertilizers, such as ammonium-nitrate (34%), urea (46.3%) and CAN (27%) were used. In the case of phosphorus and potassium I took the prices of super-phosphate (20%) and potassium chloride (60%) as bases.

Figure 9: NPK fertilizer prices corrected to effective matter(2006-2015)



Source: Own calculations and compilation based on data, 2016

It can be well seen that fertilizer prices increased considerably in 2008 due to primarily the price explosion of fuels, which was followed by a decrease. After 2012, however, prices started decreasing again. With application of SPSS trend analyses were conducted. It is to be noted that a ten-year period cannot be regarded as a short one in the case of fertilizer application but as regards item numbers it is still very low, anyway. Basic trend, however, can be inferred from them. It can be concluded that there is an increasing trend function that matches nitrogen prices, but phosphorus prices are characterized by a seasonal character indicated by a two-digit unstable average and as regards potassium there are not any matches over this time span. Over the time period indicated prices of N, P and K fertilizers increased by 82%, 136% and about 26%, respectively. Owing to the above, my hypothesis No. 1, which says that fertilizer prices in Hungary show continuous increases are discarded in the case of N, P and K fertilizers as well.

The individual factors potentially affecting prices were also analyzed, the results of which are contained in Table 3.

Table 3: Correlations between fertilizers and some potential effective factors

Factors analyzed	Pearson correlation value
Fertilizer utilization in the given year	0,259
Corn prices in the previous year	0,822
Wheat prices in the previous year	0,919
Precipitations over the given year	0,396
Mean temperature over the growing period in the given year	-0,649
Prices for natural gas (with the price of N)	- 0,623
Prices for crude oil (with the price of N)	0,464

Source own private calculation

The date in the table lead to the following conclusions:

- My presupposition according to which annual prices for corn and wheat positively influence the fertilizer utilization over the given year is not proven, there is no correlation between the two factors. As a result I discard my hypothesis No. 2.
- There are not any correlations between the annual prices in the given year and fertilizer application either.
- On the other hand there is a close correlation revealed between fertilizer prices and corn and wheat prices of the preceding years, which presupposes that fertilizer traders observe economic results and as a result of higher crop prices increase fertilizer prices, too.
- There is a weak negative correlation between N fertilizer and crude oil prices and there is no correlation between domestic N fertilizer prices and world market crude oil prices. The former is an important factor because natural gas is one of the determining base materials of N fertilizers and fertilizer production involves high energy costs but as we can see it is not this fact that determines domestic fertilizer prices. The explanation may be that in Hungary the price calculation by the crucial actors on the fertilizer market is not cost-based but is aimed at increasing the demand on the one hand and increasing the market share on the other. For this reason I accept my hypothesis No 4.

Fertilizer utilization

In the EU the highest doses of 400 kg fertilizer per hectare on the average are applied in Luxemburg, which is followed by Ireland at almost the same level, then the Netherlands, Croatia and Belgium at 300 kb/ha each. As regards Belgium's high fertilizer application the country's much higher than average (30 kg/ha) potassium application is also worth mentioning (World Bank, 2012). In Hungary similar doses (285 kg/ha) were applied between 1980 and 85 but this intense application entailed several negative consequences. As MARESELEK (2006) also highlights, industrialized farming started harmful, environment-polluting trends. Environmental damage was mostly the result of the excessive use of fertilizers and plant protecting agents.

Our current domestic fertilizer utilization is ultimately determined by the application of N fertilizers. Phosphorus application is also of considerable significance but potassium application does not reflect the volumes of fertilizers applied in individual years. This leads to the conclusion that most of the farmers still focus on the application of nitrogen and phosphorus is also applied but potassium application is either neglected or not enough attention is paid to it.

I conducted a correlation analysis of the variables that may have effects on fertilizer application, such as fertilizer prices in the given year, fertilizer prices in the previous year, weather conditions (precipitation, temperature) in the given year as well as the results of the management in the previous year, which were then compared to the cereal (wheat and corn) prices in the previous year and also tried to find correlations between fertilizer application and wheat and corn yields. The analysis was conducted at 95% reliability.

The correlations between fertilizer application and certain active components are contained in Table 4.

Table 4: Correlations between fertilizer application and some possible active components

Factors analyzed	Pearson correlation value
Nitrogen prices in the given year	0,259
Phosphorus prices in the given year	0,049
Potassium prices in the given year	-0,173
Nitrogen prices in the previous year	0,284
Phosphorus prices in the previous year	0,077
Potassium prices in the previous year	-0,090
Corn prices in the previous year	0,478
Wheat prices in the previous year	0,429
Annual precipitation in the given year	-0,366
Mean temperature during the growing season in the given year	0,475
Wheat yield and N fertilizer application	0,470
Wheat yield and P fertilizer application	0,433
Wheat yield and K fertilizer application	0,166
Corn yield and N fertilizer application	-0,259
Corn yield and P fertilizer application	-0,155
Corn yield and K fertilizer application	-0,228
Average wheat yield and N fertilizer application	0,467
Average wheat yield and P fertilizer application	0,261
Average wheat yield and K fertilizer application	0,188
Average corn yield and N fertilizer application	-0,297
Average corn yield and P fertilizer application	-0,127
Average corn yield and K fertilizer application	-0,042

Source: own private calculation

The major findings of the study

- No correlations can be shown between fertilizer application and fertilizer prices in the given year but although low, - however, stronger than with the given year- correlations are found between fertilizer application and fertilizer prices in the preceding year. This suggests that farmers mostly buy the fertilizer volumes they wish to apply not in the given but in the preceding year and store them.
- There is a negative correlation between fertilizer utilization and the price of potassium, which may lead to the conclusion that potassium is not necessarily applied by farmers even when its price is more favorable.
- My stipulation, according to which corn and wheat prices in the given year positively influence fertilizer application in the given year, was not proven and there is no correlation between the two factors.
- There is a weak correlation between fertilizer application and wheat yields in the given year but the former does not correlate with corn yields and the same can be said for average yields, too.
- There is, however, a close correlation revealed between fertilizer prices and corn and wheat prices in the preceding year, which suggests that fertilizer traders keep tabs on economic results and also increase fertilizer prices under the influence of higher prices. This conclusion is linked to my 3rd hypothesis but in lieu of certain data cannot be verified.
- The weather (precipitation and temperature) over the given year does not influence fertilizer application and thus I infer that weather related anomalies e.g. too much or too little precipitation in the given year are not made up for by farmers by applying higher doses of fertilizers.

Trends on the domestic fertilizer market revealed by partial efficiency indicators

To conclude the analysis I produced partial efficiency indicators for 2016, with the help of which conclusions may be drawn of further characteristics of the domestic fertilize market. The most important indicators are contained in Table 4.

Table 5: efficiency indicators of the fertilizer market

Domestic fertilizer market's indicators	Value	Unit
Fertilizer dose per 1 ha (kg/ha) agricultural land	97	kg/ha
Fertilizer dose per 1 ha (kg/ha) arable land	120	kg/ha
Corn price – fertilizer price ratio (%)	561	%
Wheat price – fertilizer price ratio (%)	577	%
Rapeseed price – fertilizer price ratio (%)	232	%
Fertilizer mass 1 ton corn (t) can buy	0,18	t
Fertilizer mass 1 ton wheat can buy(t)	0,17	t
Fertilizer mass 1 ton rapeseed (t)	0,43	t

Source: own private calculation

As Table 5 reveals fertilizer application per 1 hectare in Hungary is below 100 kg/ha, which volume is below that in most EU member states and what is more shows a lower than global average (120 kg/ha) value. When the above figure is calculated for arable land only, the value rises to 120 kg/ha.

As regards the correlations between buying up prices of the most important domestic crops and fertilizer prices, we can see that fertilizers account for 561%, 577% and 232% of corn, wheat and rapeseed prices, respectively. This in turn means that in 2016 the price of 1 ton of corn, wheat and rapeseed could buy 0.18, 0.17 and 0.43 t fertilizers, respectively.

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SCIENTIFIC PAPER

EFFECT OF TRAINING ON SMALL-SCALE RICE PRODUCTION IN NORTHERN GHANA

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Abstract: *Training in modern farming methods enables farm households in developing countries to improve agricultural productivity. Notwithstanding the efforts of governmental and non-governmental organisations to provide farmers with agricultural training, productivity remains low. The existing literature provides little empirical evidence of the effect of training on agricultural productivity in Ghana. This study therefore seeks to bridge this gap by investigating small scale rice farmers' participation in agricultural training programmes and its effect on productivity in northern Ghana. A treatment effect model was used to account for sample selection bias. The results indicated that participation in training increased with the number of extension visits, group membership, access to credit and the degree of specialisation in rice production. Furthermore, total output and labour productivity both increased with participation in training but the relationship with land productivity (yield) was insignificant. On average, participation in training was associated with 797kg increase in rice output, while labour productivity increased by 7.3kg/man-day. With the exception of farm capital, all the production inputs had a positively significant relationship with output suggesting sub-optimal use of capital in production. The study concludes that farmers' training needs are not adequately being met while inadequate capital is constraining farm output. Increasing access to extension service and involving farmer-based organisations in the design and implementation of training programmes will enhance participation and farm performance.*

Keywords: *Agricultural training, labour productivity, rice output, small-scale farmers, treatment effects model.*
(JEL Classification: *C21, D24, Q12*)

INTRODUCTION

Agriculture is largely a rural phenomenon in most developing countries and characterised by small-scale production. Widespread disparities in socio-economic conditions exist between rural and urban communities in Ghana. Consequently, both the central and local government authorities have placed emphasis on accelerating socio-economic development of rural communities through improvements in agricultural production. This is as a result of the recognition of the fact that promotion of agricultural production is the best policy option to alleviate rural poverty and food insecurity and thereby promote rural livelihoods and socio-economic growth (DIAO et al. 2010; FAO 2012).

Most small-scale arable crop producers in developing countries including Ghana have low level of technical knowhow which is a drawback to agricultural production(WIGGINS 2000). This situation is linked to low levels of education among producers, lack of access to extension advice and training, which altogether affect the human capital which is critical to farm performance (CLARKE et al. 2017). According to GIRGIN (2011), the role of human capital in promoting growth in productivity has gained the interest of researchers since the middle of the twentieth century. Improving the human capital has been recognized as one important step to enhance productivity in all sectors of production, hence the emphasis on quality education, training and extension advice to producers all over the world. According to the existing literature, productivity increases can be brought about by investment in human capital (BRENYA, 2014; PARDEY et al. 1992; ROSEGRANT and EVENSON, 1992). Human capital may be defined as formal/informal education and

training that promote economic growth through enhancement of firms' output and productivity. The human capital variables that require investment include education, extension, training and technology research. Human capital has a direct effect on productivity through its effect on how resources are used and combined by farmers. Human capital also affects acquisition and implementation of information as well as producers' ability to adapt to new technology. Hence efforts at improving the value of the human capital through education, access to information and training have become imperative in the modern era as means to enhance productivity. This study focuses on training as an important form of human capital that requires investment for improvement of farm performance in developing countries.

The extant academic literature provides evidence of the major role training plays in enhancing productivity. COLOMBO and STANCA (2014) investigated the impact of training on productivity using a panel data of Italian firms and found that training had a positive and significant impact on productivity. In a study on the impact of training on technology adoption and productivity of rice farming in Tanzania, NAKANO et al. (2015) observed that training enhanced adoption of improved varieties and farmers' yield. GAUTAM et al. (2017) examined the impact of training vegetables farmers in integrated pest management in Bangladesh and found that eggplant farmers who received training achieved higher crop yield and gross margin. In another study on the impact of Farmers' Training Centres in Eastern Ethiopia, WORDOFA and SASSI (2017) observed a significant average gain in farm income by participants who received training.

Training is a human capital variable which according to human capital theory enhances the skills of individuals, thereby contributing positively to output and productivity. Knowledgeable workers constitute a firm's most important asset and sustain the firm's competitiveness (LUCAS, 1993). Besides, human capital accumulation ensures sustainable long-term economic growth. Several empirical studies indicate positive effects of education and training on productivity growth. Compared to general education, training has additional benefits that are more obvious (ISMAIL et al., 2011). Training equips individuals with specific skills and competencies that lead to higher firm productivity.

Several factors are known to influence smallholders' access to training, services and information in rural communities. These factors include socio-economic, demographic and institutional factors such as gender, age, educational status, location, extension contact, among others. Identifying the factors influencing the participation of smallholder farmers in rice training programmes will provide useful insights to guide policy makers and organisations serving the training needs of small-scale farmers in Ghana and other developing countries.

Despite the important role of agricultural training in enhancing farm performance, there is little research attention on the subject. Information on the training needs of smallholders and the effect of training on farm performance is essential to providers of farmer training programmes to tailor their training activities to meet the needs of farmers. Due to the lack of research in this subject area, the current study sought to find out from small -scale rice farmers whether they were able to attend a training programme during the cropping year under review. The binary response was captured as 1 for attendees and 0 for non-attendees. Participation in training meant that the farmer was informed of the training programme and invited to attend. Training programmes included those offered by the Ministry of Food and Agriculture through its extension directorate, as well as training offered by non-governmental organisations such as the Association of Church Development Projects (ACDEP). The results of the study will highlight the factors inhibiting participation in agricultural training programmes and provide a measure of the effect of training on farm performance, particularly farm output and labour productivity.

METHODOLOGY

Study area

The study was carried out in northern Ghana, which is comprised of the Upper East, Upper West and Northern Regions. The area, unlike the rest of the country, falls within the savannah agro-ecological zone which is characterized by only one raining season. The mono-modal rainfall distribution allows only one cropping season spanning a period of 5 to 6 months. Mean annual rainfall is 1,000 mm in the Upper East Region and 1,200 mm in the south-eastern part of the Northern Region. Northern Ghana has a total area of 98,000 km2 with 16,000 km2 being intensely farmed and about 8,000 km2 being less intensely farmed (AL-HASSAN, 2008). Northern Ghana is regarded as the bread basket of the country due to its high agricultural potential. However, poverty levels in the area are higher, relative to other parts of the country. In addition, the areas accounts for about 70% of the area under rice cultivation in Ghana. The productivity of rice in the area is however low due to low soil fertility, lack of credit access and low adoption of improved technologies (SRID-MOFA, 2011).

Sampling and data collection

Data for the study was obtained from a farm household survey conducted during the 2013/2014 farming season. A stratified multi-stage sampling technique was used to select the smallholder rice farmers who were interviewed using a questionnaire. The three largest irrigation schemes in northern Ghana were purposively sampled for the study. These are the Tono Irrigation and Vea schemes, located in the Upper East Region, and the Botanga Irrigation Scheme which is located in the Northern Region. Five communities were randomly selected from the catchment area of the irrigation schemes. The respondents were stratified into irrigators and non-irrigators and equal samples of irrigators and non-irrigators were randomly selected to give a total sample of 300 respondents.

Treatment effect model

Selection bias is a common problem in evaluation studies. Selection bias typically arises when there are unobserved factors that influence the selection equation (participation in training) and the outcome variable (output or labour productivity). Furthermore, farmers may self-select into either category or some farmers may be excluded from participation, thus resulting in sample selection bias. One approach in the extant literature used to account for sample selection bias is the treatment effect model. The treatment effect model can be differentiated from Heckman's two-stage sample selection model by the treatment condition (in this case participation in training) entering the substantive equation to measure the direct effect on the response variable (MADDALA, 1983).

In this study, the selection equation is presented as an index function with an unobserved continuous variable (A_i*) as follows:

$$A_i^* = \gamma Z_i + u_i \tag{1}$$

$$A_i = \begin{cases} 1 & if\ A_i^* > 0 \\ 0 & otherwise \end{cases} \tag{2}$$

where A_i* represents the probability of participation in training such that $A_i = 1$ if the respondent received training and $A_i = 0$ if the respondent did not receive training. Zi is a vector of independent variables that explain participation in training.

The substantive regression equation (i.e. the Cobb-Douglas production function) for the study is denoted by:

$$Y_i = X_i\beta + A_i\delta + u_2 \tag{3}$$

where Y_i is rice output, X_i represents a vector of independent variables, δ measures the effect of training on output and Ai is defined as an index variable indicating whether or not the farmer participated in training. Adding the inverse Mill's ratio gives the following equation according to MADDALA (1993):

$$lnY_i = \beta'\left(\Phi_i lnX_i\right) + \delta'\left(\Phi_i A_i\right) + \sigma\phi_i + u_3 \tag{4}$$

where φ_i and Φ_i are the probability density function (PDF) and the cumulative density function (CDF) respectively of the standard normal distribution, and $\Phi_i = \Phi(Zi'\gamma)$. u3 is the two-sided error term.

2.4 Quantifying the average effect of training on rice production

In order to quantify the effect of training on rice output and labour productivity, the study estimated the average treatment effect on the treated (ATT), which is an important impact parameter in studies on evaluation and impact analysis. The average treatment effect (ATE) given the observable data is denoted by:

$$ATE = E(Y^1 \mid T = 1) - E(Y^0 \mid T = 0) \tag{5}$$

where Y^1 is rice output of participants in agricultural training and Y^0 is rice output of non-participants in agricultural training, T = 1 refers to the treated category (farmers who received training) and T = 0 denotes the untreated category (farmers without training). In the situation of a randomised design, $E(Y^1 \mid T = 1) - E(Y^0 \mid T = 0)$ equals zero and the estimate of ATE provides an unbiased estimate of impact (DILLON, 2008). This condition does not hold when there is sample selection bias. In order to deal with the possible problem of selection bias, the average treatment effect on the treated (ATT) is estimated, given a vector of household characteristics X as shown in equation (6)[1].

$$\begin{aligned} ATT = E(\Delta \mid \mathrm{X}, T = 1) = E(Y^1 - Y^0 \mid \mathrm{X}, T = 1) = \\ \mathrm{E}(Y^1 \mid \mathrm{X}, T = 1) - E(Y^0 \mid \mathrm{X}, T = 0) \end{aligned} \tag{6}$$

Empirical models

The empirical probit model for estimating participation in training is specified as follows:

$$A_i^* = \gamma_0 + \sum_{j=1}^{7} \gamma_j Z_{ji} + u_i \tag{7}$$

where Z_i refers to the independent variables affecting participation in training: Z_1 = sex, Z_2 = age, Z_3 = extension contact, Z_4 = membership in farmer organisation, Z_5 = access to microcredit, Z_6 = degree of specialization in rice production, and Z_7 = household income. γ is a vector of parameters to be estimated, and u_i is the random error term.

Similarly, the Cobb-Douglas production function (the substantive equation) was specified as

$$\ln Y_i = \beta_0 + \sum_{k=1}^{2} \beta_k D_{ki} + \sum_{j=1}^{6} \beta_j \ln X_{ji} + \delta A_i + u_{3i} \tag{8}$$

where ln is natural logarithm, Y_i denotes rice output of the i^{th} farmer and j is the jth input used in production. D_{ki} is the kth intercept dummy variable: D_1 is an irrigation dummy and D_2 is a location dummy. X_1 to X_6 are production inputs, namely land, labour, seed, fertilizer, expenditure, and capital. A_i is an index variable for whether or not the farmer participated in training and δ measures the effect of training on output. u_{3i} are as previously defined.

The variables in the study are defined in Table 1.

Table 1: Definition of variables used in the study

Variable description	Definition	Expected sign
Gender Dummy:	1 for male; 0 for otherwise	+
Age	Age of the household head in years	+/-
Extension contact	Number of extension contacts in the season	+
Group membership	Dummy: 1 if member; 0 otherwise	+
Access to microcredit	Dummy: 1 if credit user; 0 otherwise	+
Production system	Dummy: 1 if user of irrigation; 0 otherwise	+
Degree of specialization	Proportion of land area allocated to rice	+
Household income	Household income in Ghana cedi	+
Region Dummy:	1 for Northern Region; 0 otherwise	+/-
Participation in training Dummy:	1 for participants; 0 otherwise	+
Production variables		
Output	Natural log of rice output in kilograms	+
Farm size	Natural log of land size in hectares	+
Labour	Natural log of labour input in man-days	+
Seed	Natural log of seed in kilograms	+
Fertilizer	Natural log of fertilizer in kilograms	+
Other costs	Natural log of other variable costs in Cedis	+
Farm capital	Natural log of farm capital in Cedis	+

As indicated in the table, most of the variables are expected to have a positive effect on training and smallholder rice production. Age and location of the farm are the variables expected to have indeterminate effect on training and rice production. Geographical location is expected to affect access to training and rice production but the direction of effect is indeterminate. Similarly, younger farmers may be more progressive farmers and more likely to participate in agricultural training compared to older farmers. However, older farmers with more years in farming are likely to be favoured in the selection of farmers for training as a result of their social standing.

RESULTS AND DISCUSSION

Characteristics of the respondents

Participants in agricultural training were older, had larger farm size and higher output. In addition, participants in training used more inputs in production and allocated more land to rice cultivation. Access to extension, microcredit and irrigation was also higher for participants in training, who also had higher membership in farmer groups. The characteristics of the respondents indicate that several socio-economic and demographic factors are likely to influence participation of smallholder farmers in agricultural training.

Table 2: Characteristics of the respondents according to participation status

Variables	Training (n = 170)	No training (n = 130)	t-test[1]		
	Mean	Std. Dev.	Mean	Std. Dev.	
Sex	0.77	0.42	0.80	0.40	– 0.61
Age	42.3	11.8	39.8	12.9	1.73*
Extension contact	4.44	5.83	1.83	3.81	4.42***
Association membership	0.80	0.40	0.48	0.50	6.20***
Access to microcredit	0.46	0.50	0.32	0.47	2.50**
Production system	0.58	0.50	0.40	0.49	3.07***
Degree of specialization	49.4	26.9	40.1	21.6	3.21***
Household income	1.05	0.88	0.94	0.83	1.04
Region	0.32	0.47	0.35	0.48	– 0.41
Output	1894	2199	1328	1930	2.33**
Farm size	0.93	0.72	0.76	0.62	2.06**
Labour	68.9	51.3	58.1	34.6	2.06**
Seed	171.4	170.9	140.5	130.6	1.71*
Fertilizer	315.9	344.9	261.5	336.2	1.36
Other costs	200.7	177.2	167.0	204.8	1.52
Capital	145.6	159.6	105.7	137.2	2.28**

[1]The t-test indicates a test of mean difference between the two groups. ***, ** and * stand for statistical significance at 1, 5 and 10 percent level, respectively.

Analysis of factors influencing participation in agricultural training

Participation in agricultural training was analysed using a binary probit model. The maximum likelihood estimates of the binary probit model are presented in table 3. The probit model indicated that participation in agricultural training increases with access to extension and microcredit as well as membership in farmer groups.

Table 3: Probit analysis of the factors influencing participation in agricultural training

Variables	Coefficient	Std. Error	P > | z |
Sex	0.029	0.195	0.880
Age	0.009	0.006	0.160
Extension contact	0.058***	0.018	0.001
Association membership	0.749***	0.168	0.000
Access to microcredit	0.393**	0.166	0.018
Degree of specialization	0.008**	0.003	0.015
Household income	0.027	0.093	0.772
Constant	– 1.455***	0.392	0.000
Lambda ()	– 0.282 **	0.128	0.028
Rho	– 0.410		
Sigma	0.686		

***, ** and * indicate statistical significance at the 1, 5 and 10 percent level, respectively.

Contact with extension agents increased the likelihood of participation in training because extension agents link farmers to training institutions and organisations working with farmers. Access to extension by smallholders promotes knowledge acquisition on innovations and existing opportunities including training programmes. This view is supported by AWUNYO-VITOR et al. (2013). Extension agents play an important role in linking rural farmers to institutions providing training to farmers. Hence contact with agricultural extension staff is anticipated to increase the likelihood of participation in agricultural training.

The likelihood of participation in training also increased with membership in farmer organisation at 1% significance level. The result is to be expected because farmer-groups are important conduits for extension delivery and mobilization of farmers for training programmes. Any available avenue through which farmers receive information on existing opportunities for training is likely to enhance participation in agricultural training. As indicated by BINAM et al. (2005), belonging to a farmer group enhances access to information while NAKANWAGI and HYUHA (2015) associated participation in farmer groups with knowledge sharing.

Access to microcredit was positively associated with participation in agricultural training and significant at 5% level. Hence, smallholders who used credit in farming were more likely to participate in training programmes. Respondents who accessed credit for production may be more progressive farmers who are likely to be abreast with current opportunities for training. Furthermore, the result showed that farmers with greater specialization in rice production were more likely to participate in training. The result, which was significant at 5% level, shows that highly specialized farmers exhibit a higher propensity to participate in training activities. Farmers with greater specialization in rice production are more likely to be identified and selected for training programmes targeted at rice farmers.

The effect of training on rice output

The treatment effect model was used to measure the effect of training on rice output of smallholder farmers in northern Ghana. The training participation equation was estimated and the predicted values of participation were used to construct the selection control factor () which is equivalent to the inverse Mill's ratio (IMR). This enabled measurement of the pure effects of training on the response variable (rice output). The result is presented in Table 4.

Table 4: Maximum likelihood estimates for the parameters of the treatment effect model

Variable	Coefficient	Std. Error	P – value
Production system	0.904***	0.099	0.000
Regional dummy	0.514***	0.097	0.000
Farm size	0.233**	0.117	0.046
Labour	0.230*	0.120	0.055
Seed	0.173***	0.064	0.006
Fertilizer	0.099***	0.030	0.001
Other costs	0.103***	0.035	0.004
Capital	0.011	0.037	0.756
Training dummy	0.453**	0.198	0.022
Constant	– 1.205***	0.141	0.000

****, ** and * stand for statistical significance at 1, 5 and 10 percent level, respectively. Dependent variable is rice output. Wald Chi2 (9) = 627.03, Prob> Chi (2) = 0.000.*

The coefficients of all the traditional input variables have positive signs indicating that the monotonicity assumption of the production function is satisfied. Hence an increase in input leads to a corresponding increase in output. The partial output elasticity of land shows that increasing farm size by 1% increases output by 0.23%. Similarly, 1% increase in labour, seed and fertilizer increases output by 0.23%, 0.17% and 0.09% respectively. The partial output elasticities of expenditure (other costs) and capital indicate that 1% increase in other costs and capital increases output by 0.10% and 0.01% respectively. Farm size and labour therefore have the highest partial output elasticities, followed by seed. The sum of the output elasticities with respect to the six conventional input variables provides a measure of returns to scale (RTS). The RTS is 0.849, implying decreasing (diminishing) returns to scale in rice production in the study area. The result is consistent with BAAWUAH (2015) in his study involving lowland rice farmers in Ghana as well as KUWORNU et al. (2013) who found maize farmers in Ghana to operate at decreasing returns to scale.

The coefficients of access to irrigation and the regional dummy variables indicate that irrigation and geographical location affect rice productivity of smallholders in northern Ghana. Irrigation enhances rice productivity as indicated by the positive coefficient of the irrigation dummy variable. The result is consistent with ADEOTI et al. (2009) who identified treadle pump irrigation technology as an important technological innovation to increase efficiency and output of

smallholder farmers in Ghana. Similarly, farmers located in the Northern Region have higher productivity than their counterparts in the upper East Region.

The variable of interest, training is positive and significant at 5% level, meaning that farmers who received training in rice production obtained higher rice output than those who did not receive training. This is an important finding that justifies investment in training programmes that meet the specific needs of small-scale farmers in addition to the general extension advice given to farmers. As indicated by STEWART et al. (2015), two categories of interventions used to enhance food security and reduce poverty are training of farmers on new production practices and inputs, and encouraging the adoption of agricultural innovations and new technologies.

The significance of lambda (□) in Table 3 implies that selectivity bias was present in the model and that if it was no corrected, the estimated coefficients, including the training participation variable would have been biased, meaning that the pure effects of the explanatory variables on output could not be measured. The application of the average treatment effect model effectively corrected for the selectivity bias and ensured that the estimated coefficients were freed from the effects of unobserved factors that correlated with rice output.

Results of the average treatment effect of training on yield, total output and labour productivity

Table 5 presents the results of estimates of the average treatment effect of training (ATT) on rice output, yield (land productivity) and labour productivity. Nearest neighbour matching was used to match participants in training to corresponding non-participants based on their propensity scores (estimated probability of participation in agricultural training). The procedure was implemented using Stata's treatment effects command teffects.

Table 5: Estimates of the average treatment effect of training on rice output, yield and labour productivity

Outcome variable	ATT □	Robust Std. Err.	P>|z|
Total output	796.9***	168.0	0.000
Labour productivity	7.340**	2.926	0.012
Yield (land productivity)	395.3	247.3	0.110

□ indicates the average treatment effect of training on the outcome variables. *** and ** indicate for statistical significance at 1 and 5 percent level, respectively.

From the estimation results, training had a significant effect on rice output and labour productivity. On average, participation in agricultural training increased rice output of participants by 797kg. This increase in output is statistically significant at 1 percent level. In addition, participation in training led to an increase in labour productivity of 7.3kg/man-day, which is statistically significant at 5 percent level. The result is consistent with the extant literature which indicates that training enhances human capital resulting in higher business profitability and productivity of labour (EVANS and LINDSAY, 1999). Hence, the result is consistent with a priori expectation. Furthermore, participation in training led to an increase in yield (land productivity) of 395.3kg/ha but the result is not statistically significant. The authors therefore conclude from the findings of the study that training enhances human capital of smallholder farmers and leads to improved farm performance in line with a priori expectations. However, the productivity-enhancing effect of training does not have the same effect on the different productivity measures as a result of other limiting factors in production. Whereas training has a direct impact on human capital, resulting in higher labour productivity, the effect on yield (land productivity) is indirect and thus relatively modest. This is because productivity of land (i.e. yield) depends on several other factors such as inherent fertility of the land, land management practices, incidence of pests and diseases, among others (FOLNOVIC, 2015; GUTIERREZ, 2003; SHITTU et al. 2010). Hence, efforts to improve agricultural productivity among smallholders should go beyond the provision of training and extension advice to include provision of agricultural credit and irrigation that improve farm yield.

CONCLUSION

The study examined the factors influencing participation in agricultural training and the effects of participation on output and labour productivity of smallholder rice farmers in northern Ghana. The study accounted for selection bias using a treatment effect model and measured the direct effect of training on farm performance. Participation in training was found to have a positive and significant effect on rice output and labour productivity. On average, output and labour productivity gains of 797kg and 7.3kg/man-day respectively were obtained from participation in agricultural training. There was a positive effect of training on yield but the result was not significant. The study concludes that agricultural training has direct effect on labour productivity and farm output. This calls for the need to intensify training of smallholder farmers in modern rice production practices. Furthermore, agricultural training alone is inadequate to improve the yield of farmers. This is because other factors such as soil fertility management and control of pests and diseases are important in determining farmers yield. Finally, the study showed that institutional factors play an important role in smallholders' participation in agricultural training which promotes higher output and labour productivity of farmers. Hence, improving access to agricultural extension and microcredit as well as encouraging farmers to join farmer-based organisations are necessary to increase rice production in Ghana.

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SCIENTIFIC PAPER

THE CURRENT STATE OF CSR IN THE FOOTBALL CLUBS OF THE PROFESSIONAL FOOTBALL LEAGUE IN JORDAN

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Abstract: *Corporate Social Responsibility (CSR) has become a common practice all over the world, however, social responsibility in the field of sport is still a new concept and received a little attention. This study aims to reveal the current state of social responsibility practices among the football clubs of the professional football league in Jordan. A descriptive survey method was used and a questionnaire was designed to collect the required data on three aspects (administrative, financial and CSR programs). The study found that there is a medium degree of availability of the administrative and financial aspects that activate the implementation of the CSR concept. Moreover, the study also revealed a medium degree of availability of the CSR programs offered by the selected clubs. Furthermore, the study proved that the football clubs in Jordan are aware of their social responsibility and recognize their role in the betterment of the society.*

Keywords: *Corporate Social Responsibility, Football Clubs, Sports, Jordan.*
(JEL Classification: *Z29, M14, Z20, M10, L20*)

INTRODUCTION

1.1 An approach to CSR

Corporate Social Responsibility (CSR) has become a common practice all over the world. According to MISENER-MASON, (2006) social responsibility practices related to sports could be linked to community development, however, there is a great scarcity of studies of social responsibility in the field of sports, and it is still a new concept and received a little attention in CSR literature (ROSCO, 2011). According to some scholars it is related to the common understanding that sport is just a mere hobby (AKANSEL ET AL, 2010), and the lack of financial support which causes a limited value of sport as a vehicle for social responsibility (SMITH & WESTERBEEK, 2007). Consequently, "the CSR in sports has been largely neglected " ZEIGLER (2007). There is a need for a better understanding of corporate social responsibility practices in the sports field and investigate how sports can play a major role in bridging the gap between economic and social issues, (ZEIGLER, 2007).

The main idea of CSR is that business and society are interwoven rather than distinct entities, however, the sports clubs considered as a unique business organization, because they are being both social and economic institutions, they are well-suited to have a socioeconomic framework that contained business principles and CSR practices (SHETH & BABIAK, 2009; SMITH & WESTERBEEK, 2007). The United Nations identified sport as a powerful tool for strengthening social ties and networks, and for promoting the ideals of peace (UNITED NATIONS, 2005). The football game considered as one of the most popular sport in the world, therefore the football clubs should use the passion for this game as an anchor that meet the

aspirations of the people and motivate them to participate in various CSR initiatives and translate the CSR in all its aspect to serve the human being and society. In this context, this study aims to reveal the social responsibility practices in the football clubs of the professional football league in Jordan, through a comprehensive approach that investigates the degree of availability of the administrative and finical aspects and the programs offered by the selected clubs beside identifying its strengths and weaknesses, to promote its role in the field of social responsibility and improve its future initiatives.

The three aspects of the study were chosen on a scientific basis, where the Meras Center for Management Consultancy in his guidelines manual for policies and procedures of social responsibility programs have pointed out that the process of developing the CSR programs in business organizations is summarized in three stages: the planning stage, the implementation stage, and the follow up process stage, which includes the measurement and continuous improvement. However, all the stages should be accompanied by a vision and mission and set of goals for CSR that fit with the organizational structure. Furthermore, the organization should determine its financial ability, its products, and services that support its CSR initiatives. In addition, the guidelines manual includes information about the evaluation process for the current CSR programs (MERAS CENTER FOR MANAGEMENT CONSULTANCY, 2010).

According to the researcher knowledge the CSR practices in the Jordanian football clubs have not been investigated before, thus, this study will be the first which examines the CSR practices in the football clubs and provide a precise description of the CSR practices in the football clubs in Jordan, as well as, open the way for further CSR research and studies in the sports field on all levels. In addition, it will help the Jordanian sport clubs to promote CSR practices and, help the decision makers to improve the role of social responsibility in those national institutions. Furthermore, this study attempts to answer the following main question: what is the current state of the social responsibilities practices in the football clubs of the professional football league in Jordan, from the point of view of the board member's, administrators and players of the first football team?

1.2. CSR in the sport context

For decades, the CSR concept has been circulating in corporate boardrooms, but after a wave of criticism, and more of public pressure, new challenge has been created to the business climate and demand on business to behave ethically towards society and the surrounding environment, perhaps in response to this growing skepticism, some leading companies have publicly labeled themselves as socially responsible, and become more interested in spending on social problems (MAIGNAN AND FERRELL.2004). SCHWAB (Executive Chair, World Economic Forum) (2008, p. 107) stated that "Compared to just a decade ago, it is now common for business people to talk about social responsibility and the importance of being good corporate citizens". (SCHWAB, 2008).

In today's business environment, where companies have become global citizens, the world has witnessed new forms of corporate social responsibility, including the CSR in the sports fields. According to SMITH AND WESTERBEEK, (2007) the features of sports corporate social responsibility are: 1) Increase the communication power with the media, 2) Support youth participation, 3) Positive health effects, 4) Interaction with social life, 5) Increase awareness and cultural integration. Moreover, there were many driving forces behind the adoption of CSR in sports organizations, according to BABIAK AND WOLFE'S, (2009) there are different types of external forces, that play an important role in the adoption of CSR by professional sports teams such as constituents of the initiatives of other organizations, and more broadly the perceived expectations of society, beside an internal dimension, such as resources which play a major role in determining the adoption of CSR.

Hundred and fifty years ago, the churches in England had been the first who established soccer clubs to help the homeless people, youngsters, children, and teenagers, who were taken from the streets and brought to places next to the church's and provided with food, shelter and integrate them into their social lives by playing football. For example, clubs such as Everton, Aston Villa, Fulham or Southampton, established to serve social issues based on churches ethical and moral role in the society. By the beginning of 1887, in the era of the British Industrial Revolution, companies had set up special football teams to achieve a better use of their employees free time, and keep them away from the danger of an alcoholic community, in order to enhance their productivity, a particular example is West Ham United, a football club established in 1895 by Thames Ironworks in London. On the other hand, Football clubs, such as Manchester City, Blackburn Rovers or Nottingham Forrest have emerged from the pubs, where pubs owners organized football matches in order to satisfy their customers. Furthermore, the public schools were the first places for football and it was played in order to keep the pupils away from dangerous addictions, such as drinking or smoking and since then the game spread to the European continent and to all of the world (AKANSEL ET AL, 2010, ROSCA, 2011). Up to now, the sport has also become a business, in the center of which are the players themselves, and where talent and career management have a strong relationship (BÁCSNÉ (2015), HÉDER-DAJNOKI, (2017)).

In recent years, the football industry has emerged and football clubs have become an independent economic and social institution. BREITBARTH AND HARRIS (2008) indicated that soccer has become an industrial issue during recent years and influenced sports administrators to be more conscious in social-politic issues. Although professional soccer clubs today have historical significance, their social identities cause them to be seen as the real representatives of society. This characteristic facilitates soccer clubs to integrate with society and can increase the effectiveness of CSR activities. Consequently, football organizations increasingly use CSR activities to deploy their corporate brand in the eyes of their fans, spectators, and online consumers. Some clubs established their own charitable foundations that provided

social services, others established a CSR department to fulfill their obligations to society. In addition, some famous players have established their own charitable institutions such as the B. Samuel Foundation and the Leo Messi Foundation Moreover, national federations and associations have launched some social responsibility programs such as the Turkish Football Federation and the English Premier League. On international level FIFA established its own Social Responsibly Department in 2005 (AKANSEL ET AL, 2010, ROSCA, 2011).

In the growing global interest in social responsibility, the sport is considered as an opportunity to improve the quality of life, it can work as a bridge to cross the social and economic gaps (SMITH AND WESTERBEEK (2007). Consequently, the national and international football clubs' federations started to realize their responsibility towards their societies through implementing distinctive CSR programs, projects and initiatives that enhance the community sustainability, for example, Barcelona Club allocated part of its income for the benefit of the Barcelona football foundation and implement some of the international development programs. Manchester United, with his foundation for charity, launched various social initiatives in fields like education and health. Researches and studies show that the European clubs, in particular, the English ones show their interest in social responsibility. For instance, the study of AKANSEL, ATES, TAPAN & OZDEN (2010), which has conducted on 43 federations and 53 clubs in Europe, presented a group of clubs that have participated in many activities of social responsibility. In addition, there are some clubs in the middle east region that adopted the concept of social responsibility, for example Al Sadd Sport Club, which is a Qatari sport club that, in 2011 established the Social Responsibility Unit ,and launched initiatives that supported the Qatari Federation for People with Special Needs and provide assistance to many local community institutions (AKANSEL ET AL, 2010, ROSCA, 2011).

1.3. Sports in the Jordanian context

In Jordan, as part of the global community, football has always been and remains the most popular sport in the country. According to the Jordanian football association "football is about the people; the players and the fans. It is a celebration of our culture. Our beliefs and our connection to the global community." (HTTP://WWW.JFA.COM.JO/EN/ABOUT/).

Football is considered as the most popular game in Jordan, and it receives great attention from various segments of the Jordanian people. The game practices run by Jordan football association, which is the governing body of football games in the country and administrate the national team as well as the national league. The Jordan football association cup is Jordan's premier knockout tournament in men's football (soccer) game, a Jordanian professional league for football clubs, known as Jordan Cup Al Manaseer after the FA (Football Association in Jordan) signed a sponsorship deal with Ziyad AL-Manaseer Companies Group. Jordan Professional League (AL-Manaseer) represents the top Jordanian football clubs, the championship consists of twelve competing teams in a home and away league system. The league is largely similar to that of the Scottish premier league or Spain's la Liga" (https://en.wikipedia.org/wiki/Jordan_Premier_League).

The majority of logos of sports clubs in Jordan includes and demonstrate three words "social - cultural and sports club", which explained the meaning of the sports club as a "social-cultural and sports institution". According to the sports clubs' rules and Regulations that issued by the Jordanian Ministry of Youth in 2005, the sports club was defined as a Non-Governmental Organization that authorized to exercise and practice sports, cultural and social activities. It is legally established to achieve social goals that serve the whole society, therefore sports club understood in the Jordanian context as the institution that aims to promote good citizenship, through implementations of programs and activities that attached to the state goals and objectives (MINISTRY OF YOUTH, 2005).

Historically, and based on information published before 1946 by Jordanian newspapers, the first football club's establishment in Jordan was in 1928, it was called Jordan Sports Club, and then some of its members moved out and formed a new club called Prince Talal Club. Furthermore, in 1929 the Circassian Club was founded. However, the three clubs did not last long because most of their members were Jordanian students who left the country to peruse their education abroad. The club, which is considered as one of the first clubs which last long in terms of its appearance and participation, is al- Faisaly Club, which was established in 1932 and firstly called Al-Ashbal Club ,then changed its name to al- Faisaly Scout Club, and now it is known as al- Faisaly Club. (HTTP://WWW.ALFAISALYSCJO.COM).

The first league championship in Jordan was in 1944, where Jordan considered as the first of Arab and Asian countries that introduce an official football tournaments. Jordan Football Association (JFA) established in 1949 and soon joined FIFA in 1958, and in 1974 became a founding member of the UAFA (The Union of Arab Football Associations) and a member of AFC (Asian champion's league) in 1975. The JFA oversees all football tournaments and activities in Jordan, starting from the grassroots, center, official local tournaments, women's football and the men's football championships (HTTPS://EN.WIKIPEDIA.ORG/WIKI/JORDAN_PREMIER_LEAGUE).

MATERIALS AND METHODS

The study adopts a descriptive survey method, using a cross-sectional approach. In this research both primary and secondary data were used, the secondary data is used to obtain information about the CSR in sports, with respect to the football clubs in Jordan. Data was collected from journal articles, Ph.D. theses, books, and websites of CSR and sports fields. Regarding the empirical part of the research the primary data was collected in order to describe the opinion and attitudes of the respondents toward the CSR practices in the football clubs of the professional league in Jordan by using a structured questionnaire, built, developed and based on several questionnaires that were previously used in CSR research's as well as in other sports studies especially the study of AL-QARNY, (2014), (SAUNDERS, ET AL. 2009).

2.1. Study population and samples

The study population consists of all board members and administrators and the first football team players of the 12 football clubs of the Jordanian professional league with a total targeted population numbered 513. The sample was randomly selected, 240 responses have been attained in the statistical analysis process, with a ratio of 47% percent of the total targeted population. This high response rate was mainly due to the fact that the questionnaires were distributed to 12 clubs and were accompanied by oral communications from the sports clubs' directorate at the Ministry of Youth in Jordan and it was delivered and collected through its own official channels and supported by the potential efforts of the ministry employees.

Table 1: Study Population

No	Club Name	City	Board of Directors	Adminis-trator	Football team player	Study total population
1	Al-Faisaly	Amman	9	4	30	
2	Al-Hussein SC (Irbid)	(Irbid)	9	6	30	
3	Al-Ramtha SC	Al-Ramtha	9	5	30	
4	Al-Jazeera	Amman	9	4	28	
5	Al-Manshia	Al-mafreq	11	6	25	
6	That Ras	Al-Karak	7	5	24	
7	Al-Yarmouk FC	Amman	7	5	27	
8	Al-Wehdat	AMMAN	11	8	30	
9	Shabab Al-Ordon Club	Amman	9	4	30	
10	Al-Baqa'a Club	Amman	9	6	30	
11	Al-Ahli Sports Club	Amman	9	8	30	
12	Al-Aqaba	Al-Aqaba	7	6	26	
Total			106	67	340	513

Source: Ministry of Youth, 2017.

2.2. Data collection method

A questionnaire was used to achieve the study goals and have been distributed and collected from board members and administrators and players of 12 football clubs in Jordan for the year 2017. The questionnaire was fairly comprehensive, consisting of 49 items and distributed on three dimensions (administrative, financial & programs offered) and investigating the degree of availability of administrative and financial factors that activate the CSR implementations in the club also, and examine the social responsibility programs provided by professional league clubs in Jordan from the perception of board members, administrators, and the players. The data for this research were collected from the selected clubs and subjected to an excel database, it was coded and analyzed using SPSS software.

RESULTS AND DISCUSSION

3.1. Reliability Test (Cronbach's Alpha)

Reliability is expressed as a coefficient and it ranges from (0.00-1.00) thus, if the coefficient is high this means the reliability is high and vice versa. Also, it refers to the degree that the aspect is offering constant data and free of accidental errors. Cronbach Alpha was used in this research to calculate the questionnaire's reliability.

Table 2. Reliability in the Scale's aspects

ASPECTS	Number of Items	Cronbach alpha
Administrative aspects	23	0,91
Financial aspects	11	0,80
Programs provided	15	0,85
All	49	0,94

Source: Private edition, 2018.

3.2. Respondents' demographic description

The following results have been found after analyzing the collected data from the responding sample in terms of, years of experience, academic level and the type of relationship with the club.

Table 3: Sampling Distribution by Demographic Information

Variable	Options	Frequency	Percentage
Years of experience	Less than 5years	56	23
	5 -10 years	113	48
	Above 10 years	71	29
Total		240	100
Academic Level	Less than Bachelor Degree	117	49
	Bachelor Degree	91	38
	High- Level Degree	32	13
Total		240	100
The type of the relationship with the club	Member of the Board of Directors	73	30
	Administrator	65	27
	Football team player	102	43
Total		240	100

Source: Private edition, 2018.

The study sample distribution by practical experience indicated that 23% of the study sample have less than 5 years of practical experience, and 48%, ranging from 5 to less than 10 years, and 29%, have above 10 years of practical experience. The study sample distribution by the academic level has revealed that 38% of respondents hold a Bachelor's degree, and that 49% are holding less than Bachelor Degree, and that 13% have obtained High- Level Degree. The study sample distribution depending on the type of the relationship with the club indicated that 30% of the study sample were Members of the Board of Directors and 27% were working as administrators in the club and 43% who are the players of the first club team.

3.3 Descriptive analysis results

3.3.1 The administrative aspect

In this section, we will analyze the data of the research sample and review the most important results of the questionnaire, through utilizing the averages, and the standard deviations of all research questions that measuring the degree of availability of the three aspects in order to answer the research mean question.

Descriptive analysis of the administrative aspects was used to assess the results obtained from the questionnaires and set out to provide an answer to the following sub-questions: What is the state of the administrative aspect of social responsibility practices in the football clubs of the professional league in Jordan, from the point of view of working members and players? Results are indicated as follows:

Table 5 indicates that the study sample perception regarding the availability degree of the administrative aspect Means ranged between (2.49 – 2.89) with a Standard Deviation of (1.29 – 1.00) respectively. The Administrative aspect questions got responses that were mostly around the average and indicated that the respondents were mostly socially responsible. The results also showed that statement No. (18) " The club participates in social activities organized by the Ministry of Youth "ranked the first, while statement no. (10) " There are documented publications containing the tasks, duties, and programs of social responsibility in the club ranked the last. And the General Mean (2.70) confirms the medium degree of availability of the administrative factor for

Table 5: Means and Standard Deviations of Sample Responses Regarding the administrative aspect

No	Statement	Mean	S.D	Rank	Degree
18	The club participates in social activities organized by the Ministry of Youth.	2.89	1.09	1	Medium
10	Club facilities are suitable for the implementation of social responsibility activities.	2.88	1.20	2	Medium
23	The club is keen to use water conservation tools	2.86	1.08	3	Medium
22	The club is interested in rationalizing the consumption of electricity	2.84	1.14	4	Medium
12	It is used in the player's celebrity in the implementation of programs of social responsibility	2.81	1.08	5	Medium
5	There is a consensus between the objectives and programs of social responsibility and the goals of the club.	2.80	1.19	6	Medium
3	There is a declared goal of social responsibility of the club.	2.79	1.17		Medium
13	The club uses materials and devices that do not adversely affect the environment (materials friendly to the environment).	2.78	1.14	7	Medium
1	There is an independent management department of social responsibility in the club.	2.78	1.18	8	Medium
8	There are partnerships with specialized institutions, and bodies to develop the management process of social responsibility in the club.	2.70	1.29	9	Medium
14	The club cooperates with local bodies and institutions to preserve the environment.	2.69	1.03	10	Medium
9	The club is keen to use tools and devices that can be recycled	2.63	1.19	11	Medium
19	There are periodic reports on social responsibility programs implemented by the club.	2.74	1.29	12	Medium
2	There are a vision and a mission for the social responsibility of the club.	2.72	1.15	13	Medium
4	There is a measurable timeline for social club programs at the club.	2.70	1.29	14	Medium
17	There is a promotional personality for social responsibility programs.	2.67	1.03	15	Medium
20	The club makes a balance between social activities and sports activities	2.63	1.19	16	Medium
6	There are full-time specialists for social activities at the club.	2.62	1.00	17	Medium
15	There are incentives for clubs that have effective initiatives in social responsibility.	2.60	1.11	18	Medium
7	There is a logo for social responsibility that shows its goals.	2.57	1.29	19	Medium
11	An icon is available at the club's own social club to advertise their programs.	2.56	1.15	20	Medium
16	The club is keen to use tools and devices that can be recycled	2.53	1.09	21	Medium
21	The club takes into account the observations raised by the different institutions of society regarding its social activities.	2.50	1.08	22	Medium
10	There are documented publications containing the tasks, duties, and programs of social responsibility in the club.	2.49	1.23	23	Medium
General mean		2.70	1.15	Medium	

Source: Private edition, 2018.

implementing the CSR practices from the sample‘s subject‘s point of view.

3.3.2. The financial aspect

Descriptive analysis of the financial aspects was conducted to answer the following sub-question: What is the state of the financial aspect of social responsibility practices in the football clubs of the professional league in Jordan, from the point of view of working members and players?

Table (6): Means and Standard Deviations for Sample Responses Regarding the financial aspect

No	Statement	Mean	S.D	Rank	Degree
24	There is a budget available for social responsibility activities.	3.03	1.20	1	Medium
25	Members of honor in the club adopt funding for social responsibility programs.	2.99	1.20	2	Medium
28	There are sponsors for social responsibility programs outside the club.	2.98	1.19	3	Medium
31	Support is available from the Ministry of Youth for social responsibility programs.	2.97	1.22	4	Medium
26	A percentage of the games, ticket sales income goes for programs of social responsibility.	2.95	1.18	5	Medium
32	Some of the club’s players are involved in the funding of the collective responsibility programs.	2.89	1.88	6	Medium
27	Charitable matches are held for the social responsibility programs	2.88	1.18	7	Medium
29	A percentage of the broadcast match’s rights go for social responsibility programs.	2.87	1.14	8	Medium
34	Sponsoring companies contribute to the club in supporting social responsibility programs.	2.86	1.14	9	Medium
33	There are a percentage of club sales such as player shirts for social responsibility programs.	2.85	1.12	10	Medium
34	A percentage of the value of a professional player’s contract is allocated to social responsibility programs.	2.84	1.24	11	Medium
General mean		2.91	1.24	Medium	

Source: Private edition, 2018.

Table 6 indicates that the study sample perception regarding the availability degree of the financial aspect means ranged between (2.84– 3.03) with a standard deviation of (1.88 – 1.12) respectively. The financial aspect questions got responses that were mostly around the average and indicated that the respondents were mostly socially responsible. The results also showed that statement No. (24)” There is a budget available for social responsibility activities “ranked the first, while statement No (34)” A percentage of the value of professional player’s contracts is allocated to social responsibility programs “ranked the last, In addition, the General Mean (2.91) confirms the medium degree of availability for the financial factor in implementing the CSR practices from the sample‘s subject‘s point of view.

3.3.3. The CSR Programs

Descriptive analysis was conducted to answer the following sub-questions: What is the state of the CSR programs which provided by the football clubs of the professional league in Jordan, from the point of view of working members and players?

Table (7): Means and Standard Deviations of Sample Responses Regarding the CSR provided programs

No	Statement	Mean	S.D	Rank	Degree
13	There are programs offered at religious, national and sporting events.	3.10	1.15	1	Medium
7	There are programs targeting orphans.	2.92	1.12	2	Medium
9	There are programs for youth.	2.91	1.14	3	Medium
4	There are joint programs with government institutions.	2.88	1.24	4	Medium
2	There are various programs to enhance the sport culture.	2.84	1.18	5	Medium
	There are various programs to raise the level of health awareness.	2.83	1.10	6	Medium
10	There are programs targeted the school’s students.	2.82	1.08	7	Medium
6	There are programs for children.	2.81	1.11	8	Medium
8	The club maintains programs to enhance intellectual security.	2.80	1.24	9	Medium
12	There are programs to reduce sports violence.	2.78	1.19	10	Medium
1	There are training programs for members of the community outside the club.	2.75	1.09	11	Medium
7	There are programs targeting club staff members.	2.74	1.06	12	Medium
5	Design programs targeting people with special needs.	2.73	1.11	13	Medium
14	There are environmental awareness programs.	2.72	1.13	14	Medium
11	There are programs directed to club fans and supporter.	2.70	1.19	15	Medium
General mean		2.84	1.28	Medium	

Source: Private edition, 2018.

Table 7 indicates that the study sample perception regarding the availability degree of CSR programs provided by the selected football clubs, Means ranged between (2.70 – 3.10) with a Standard Deviation of (1.28 – 1.08) respectively. The CSR programs questions got responses that were mostly around the average and indicated that the respondents were mostly socially responsible. The results also showed that statement no. (13) “There are programs offered at religious, national and sporting events “ranked the first, while statement no. (11) “ There are programs directed to club fans” ranked the last. And the general mean (2.84) confirms the medium degree of availability

of CSR programs provided by selected sports clubs from the sample‘s subject‘s point of view.

Table.8. Total percentage of Means and Standard Deviations of Sample Responses in descending order

No	The Aspect	Mean	S.D	Rank	Degree of Availability
1	The Financial Aspect	2.91	1.24	1	Medium
2	The Programs provided	2.84	1.28	2	Medium
3	The Administrative Aspect	2.70	1.15	3	Medium
Total		2.82	1.2	–	Medium

Source: Private edition, 2018.

Table 8 shows that the sample‘s perception on the state of CSR practices mean ranged between (2.70-2.91) with an average degree (2.82), and confirm the medium degree of availability of CSR practices in the football clubs of the professional football league in Jordan, also showed that the financial aspect ranked the first and the programs offered ranked the second while the administrative aspect ranked the last. Overall, the research results indicated that the main research question regarding the current state of CSR in the football clubs of the professional football league in Jordan got responses that were mostly around the average and revealed that the respondents were mostly socially responsible.

4. CONCLUSIONS

Social responsibility in the field of sport is still a new concept and received a little attention in CSR literature, so this research may be considered as a preliminary attempt to gain a comprehensive understanding of CSR current practices in the football clubs of the professional football league in Jordan from the point of view of board member’s, administrators and players. The study revealed the following results for the research sub –questions in order to answer the main research question, which is stated as what is the current state of CSR practices in the football clubs of the professional football league in Jordan?

- Regarding the sub-question about the availability degree of the financial aspect in the selected football clubs, the results indicate that the financial aspect mean ranged between (2.84 – 3.03) with a standard deviation of (1.88 – 1.12) , and the general mean (2.91) which is mostly around the average from the sample‘s subject‘s point of view, and it shows that the financial aspect ranked at the first as the most important factor that enhances and activate the CSR practices where the sport clubs determine its financial ability, its products, and services to support its CSR initiatives, with respect to the limited resources.
- Regarding the sub-question about the availability degree of CSR programs provided by the selected football clubs, the study sample perception shows that the availability degree of CSR programs provided by the selected clubs ranked the second ,and the mean ranged between (2.70 – 3.10)with a standard deviation of (1.28 – 1.08)And the general mean (2.84) which confirms the medium degree of availability of CSR programs as the sample‘s agreement on CSR practices, also it shows the interest of the football clubs in implementing the CSR activities to serve their communities.
- Regarding the sub-question about the availability degree of the administrative aspect in the selected football clubs, the study shows that the administrative aspect ranked the third and, the mean ranged between (2.49 – 2.89) with a standard deviation of (1.29 – 1.00), and the general mean (2.70). The administrative aspect questions got responses that were mostly around average and indicated that the respondents were mostly socially responsible, as the sample‘s subject‘s point of view stressed the importance of considering the Administrative aspect in managing CSR activities in football clubs.

Overall, the sample‘s perception on the current state of CSR practices in the football clubs of the professional football league in Jordan, shows that the mean ranged between (2.70-2.91) with an average degree (2.82) which confirms the medium degree of availability of the three aspects that promote the process of CSR implementation and express the importance of considering those aspects in managing CSR in football clubs from the sample‘s subject‘s point of view. In addition, the results show a little different in the ratio of degrees among the three aspects, where is the degree of availability of the administrative aspect as the last factor that enhance the implementation process of CSR is not far away from the rates of other aspects and all degrees stayed within the same average of availability. Furthermore, it shows that the respondents were mostly socially responsible where the Board members, administrator, and players were relatively concerned with the social responsibility concept. This may be attributed to the society who views sport clubs as social organizations that should priorities the social needs of the society.

The results revealed that there is a recognition of the concept of social responsibility by the board member’s, administrators and players of the selected football clubs and they are aware of their social responsibility towards their society and surrounding environment, which consistent with other research studies on CSR in Jordan, such as the study of the (VISION INSTITUTE, 2014) and (AL-DMOUR AND ASKAR, 2011). It’s clear that more and more Jordanian stakeholders are becoming aware of the CSR concept and some organizations in Jordan are working their way towards strategizing CR efforts. In fact, the findings of the study provided support for the existence of CSR practices among the Jordanian sport clubs, on the contrary to the previous studies revealed that the concept of CSR was new in Jordan (ELIAN, 2005).

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SCIENTIFIC PAPER

TOURISM DEVELOPMENT CHALLENGES OF AN ISLAND DESTINATION IN A AGING SOCIETY, CASE STUDY OF OJIKA ISLAND OF JAPAN

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Abstract: *Japan's inbound tourism numbers have been steadily rising in the past decade due to active promotion, easing of visa regulations, rapidly developing Asian economies and the depreciation of the Japanese Yen. The government's goal is welcoming 40 million foreigners yearly by 2020, and leading them to rural destinations. There is a concern whether rural destinations in Japan are prepared for this sudden surge of tourists. The plans to bring masses to rural destinations implies a steady supply of tourism service, but the ageing and shrinking population of Japan together with the migration towards cities, leave some destinations without a key resource: workforce. This paper tries to understand the current situation of such rural, isolated communities, and whether they have the capacity to develop and expand the tourism industry. The case study was carried out on Ojika, an island destination in Nagasaki Prefecture. Several visits to the destination, participant observation and structured as well as unstructured interviews with stakeholders provide the primary data for the research. Through interviews with town officials, businesses and residents, different approaches to the demographic problems are introduced. The results show that the tourism development strategies cannot concentrate only on the strictly tourism industry elements of the destination but have to look at the community and infrastructure too, in this case, the labor market. The demographic change in society can put a limitation on development, thus counter measurements have to be considered and included in the tourism strategy. Further research is needed on less remote destinations, where there is a land-connection with another settlement, and whether a "commute based workforce" can ease the problem or by raising the costs of labour, a different, feasibility problem arises in the accommodations.*

Keywords: *Tourism, Island Destination, Depopulation, Japan.*
(JEL Classification: *Z32 Tourism and Development*)

INTRODUCTION

The tourism industry is a growing contributor to the national economies in many countries around the world, and Japan is not an exception from this trend. The Japanese government selected tourism as one if the growth industries and renewed efforts to promote inbound tourism in 2003. The first target was set at 10 million foreign visitors by 2010, followed by a 20 million target until 2020. After successful inbound strategies lead to a rapid rise of visitors, the government doubled its original target for the year 2020 to 40 million inbound tourists, and also put an emphasis on trying to get foreigners to visit rural Japan.

Easing visa application requirements for some Asian countries and restructuring of tourism-related governmental organisation, together with a weakening yen and rising Asian economies caused a surge in inbound tourists (Funck and Cooper, 2013). This sudden rise in demand needs to be met with the expansion of the supply side of the tourism market, meaning a growing number of accommodation and services. However, capacity building cannot be done in a short time. Major cities have some possibilities to react to the change, with hotel developments, hotel remodelling (from love hotels) and easing of the hotel building rules. A different approach is embracing the new sharing-economy by allowing residents to participate in the accommodation supply market through Airbnb like services. However, when it comes to small rural destinations, structural differences and demographic issues can limit the possibility of enlarging the visitor welcome capacity.

Japan's population is already in the next stage of ageing, it is considered a hyper-aged society where 21% or more of the people are over 65 years old. This is even more severe in the

rural communities, where the ageing population is coupled with a steady migration of the youth towards the cities. One of the reasons is the lack of higher education possibilities, but the birth rate disparity between cities and rural areas also play an important role (Coulmas, 2007).

This paper aims to investigate the limitation that island Japanese tourism industry faces through a case study of the island destination Ojika in Nagasaki Prefecture, Japan. Through this analysis, underlying issues are introduced, which have an impact on the tourism growth strategy of the Japanese (central) government.

MATERIALS AND METHODS

Case study and interview

This research paper tries to introduce the problem of tourism destination capacity through the case study of an island destination in southern Japan. While urban areas have different possibilities to develop the supply side of the tourism industry, in rural communities, especially in small island destinations, demography and the available workforce can limit the possibilities of expansion of the accommodation capacity.

The primary research about the destination was carried out in three phases. The author participated in a 1-month long rural development internship organised by the local town hall in August of 2013. During this short stay, the different parts of the local community were introduced through 1 or 2 day long internships at different establishments and facilities (senior home, kindergarten, tourism association, agricultural school and producers, and so forth), and time spent in the homes of fishermen in the form of a homestay.

The second part of the data collecting was in the form of interviews and participant observation in November of 2015 and May of 2016. The connections that the author made during the internship were crucial in setting up the interviews with members of the tourism industry and municipality.

The third step was a follow-up in the form of a shorter trip in 2017, which was already concentrated on the trends identified in the series of interviews. In this phase, a short meeting was sufficient enough to obtain the needed information, and structured interviews were not recorded.

The acquired information is analysed together with secondary data from demography reports and population forecasts.

The interview subjects were selected in a way, to have different stakeholders of the local tourism industry and community. Successful interviews included the owner of an accommodation (IWANAGA T., owner of Goen Inn, former employee of Ojika Island Tourism Association), a founding member of the tourism association (KAMETSU J., founding member of Ojika Island Tourism Association, currently managing Ecotour Kyushu Nagasaki) and officials from the town hall (EGAWA K., and NAGATA K., Revitalization Department, Town Hall of Ojika). Informal interviews with homestay families were also important input to the research.

The local tourism association refused to give interview and data during both field trips of 2015 and 2016, thus only the information from the local town hall and the prefecture office was available.

Introduction of the community

In the case of small communities like Ojika, the small population and distance from other settlements accelerate the trends created by the ageing populations and migration towards the city. While the local governments across Japan try to attract young and old residents of big cities and support the return of the residents who moved out of the community, the results as good as may be, can not counterbalance the change that began decades ago. The change is rooted in the past, as the geographical and historical properties of the island community shape the community and its possibilities, in this case creating an environment of continuous emigration. Before detailing the demographic difficulties impacting the tourism industry's future, the island's origin has to be introduced.

Location and formation

Ojika is located off the coast of Nagasaki Prefecture in south-west Japan, near Kyushu (the southern main island of Japan). Ojika "town" consists of one larger and 17 smaller islands, with the main island called Ojika Island and the biggest settlement called Fuefuki. The translation of "town" from Japanese is difficult as it means a municipality rather than a settlement. Ojika is no different; while officially it is translated into English as Ojika Town, it stretches out to a number of inhabited and uninhabited islands. In some cases in Japan, so-called "towns" can reach out to islands some 80km from the main city centre. This is the result of the Japanese municipality mergers that happened in the 20th century (Meiji period (1868-1912) merger, Shouwa period (1926-1989) merger, Heisei period (1989-2019) merger).

The main island was formed in a rare volcanic process which is different from most of Japan's islands, in that it creates a flat island and a connected flat and shallow sea-floor. In contrast, the neighbouring island of Nozaki (part of Ojika Town) has the high mountainous topography familiar across Japan. Access to the community is through two ferry lines, from Fukuoka city (Fukuoka prefecture) which takes about 5 hours and from Sasebo city (Nagasaki prefecture) which is 2 hours. The airport on the island is still in operation, but there is no regular service, only charters in high seasons. This remoteness is a blessing and a curse at the same time; most of the visitors spend the night on the island, but it is too far for the day-trip tourists.

Ojika's history

The Ojika islands have a rich history, its name being mentioned as early as 732 CE in The Chronicles of Japan. In ancient times the island was an important harbour as the last stop for the Japanese missions towards the Tang dynasty China (7th – 9th century). Later in the early 17th century, Ojika was part of the few domains in Japan that was allowed to trade with other nations. This trade connection helped

build a rich community. In the same period, Ojika's economy also prospered because of a flourishing whaling industry, which produced some of the wealthy families of the island like the Oda family. Christianity is also an important part of Ojika's past. The arrival of the missionary Francis Xavier in 1549 brought Christianity to Japan and was welcomed by the people. As the religion gained unforeseen popularity, an edict was issued by the leaders of Japan in 1587, expelling missionaries, followed by a total ban of the religion by the Tokugawa Shogunate in 1614 century. In the 18th and 19th century, the hidden Christians slowly migrated towards the western islands of Japan, as far from the central administration as possible (World Heritage Registration Promotion Division, 2015). Ojika Island and neighboring island of Nozaki were one of these places of refuge. Both islands had a Christian community, and on Nozaki, a small brick church was built after the ban of the religion was lifted in 1873. Together with many other churches, this church has been added to the Tentative List of UNESCO World Heritage Sites in 2007 and is waiting for the final decision. Although Nozaki Island had been abandoned since 1971 a few years ago, the local primary school was renovated, and now functions as an accommodation for eco-tourism and school excursion groups.

The seclusion of the country, changing trade routes, regulation of whaling and the deterioration of the sea-life due to the global climate change all contributed to the decline of the local fishing industry, which changed the structure of this small but old community.

Community

Ojika town is going through a slow change similar to other islands and rural communities in Japan. The globalisation of the food market, migration towards the cities and ageing society of rural Japan together with an overall shrinking of the country's population, causes some of the communities to struggle for survival or disappear entirely. Ojika town is no exception from these trends.

The population of the island peaked in the 1950s with around 11'000 (Local Government Finance, 2013) inhabitants, and decreased to 2,634 in 2015, as can be seen in Figure 1. This sharp fall of nearly 76% forced the remaining community to gather in on the main island, abandoning some smaller islands (most importantly the neighbouring Nozaki Island).

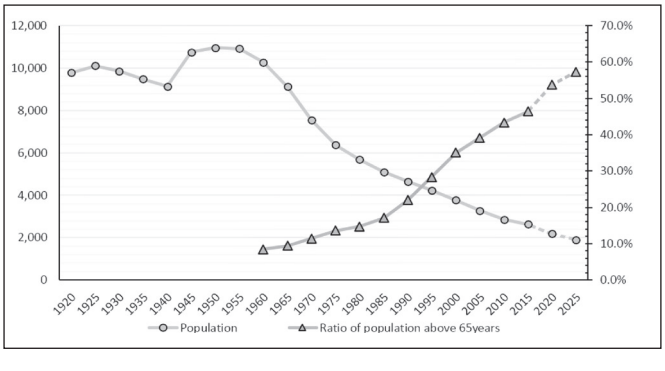

Figure 1. Ojika's population and population forecast

The ratio of the population above 65 years old was 43.4 in 2010 in Ojika, while Nagasaki Prefecture's rate was 26.3%, and Japan's national average was 23% in the same year. In 2015, the numbers changed to 46.4% in the case of Ojika and 26.8% in national scope (OTH, 2016). As we can see, the rapid ageing of Ojika's community overpasses that of similar islands and the national average. This can be traced back to different demographic issues such as the birth-rate decline, the rapid ageing of the population, trend of late marriage, and the education migration towards the bigger cities, which are national wide problems in Japan (Coulmas, 2007).

Main Industries

Ojika's traditional main industries are the fish and agricultural industries. The rare formation of the island through the constant flow of lava gives it a flat land surface suitable for crops and a flat seabed with a rich flora.

The traditional whaling industry in the 17th century gradually changed to fishing smaller fish like isaki, tai and squid. Collecting sea snails and abalone from the sea (both for its meat and its pearl) was also an important part of the local economy from a few hundred years ago, but with the recent change of the sea life, it is now restricted and done in a semi-artificial environment.

Agriculture also had a long history, as can be seen in the current shape of the island: in the late 1700s, by the order of the feudal lord of Hirado province (where Ojika belonged) two islands were connected using nothing but human and oxen power, to form the present island of Ojika, thus expanding the surface for agriculture.

Although agriculture and fishing are still an important part of the island's life, a shift towards the service industry can be seen in the graph below.

The low hovering price of fish products, the rising of the petrol prices, climate change and the sea desertification is responsible for the falling number of families making a living off the sea, as explained in an interview with the town hall in 2015. The declining number of seamen together with the ageing of the community causes rising welfare costs together with the rising number of people working in the health industry. These are a few of the reasons why the working population ratio changed between the different types of industries. The service industry became more and more important from the 1960s, surpassing the primary sector in 1995 for the first time (OTH, 2010), as seen in Figure 2.

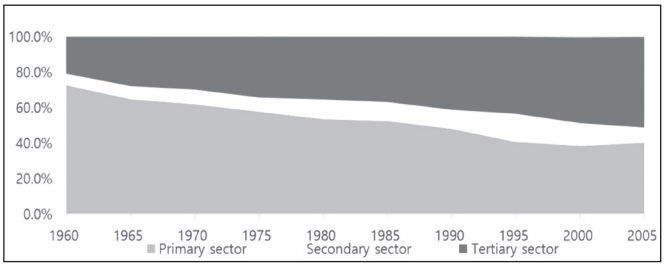

Figure 2. Ojika's working population by sector

The average yearly income of the islanders is 2'439'720 JPN which puts it into the 1487th position from the total of 1741 municipalities in Japan. This is far below the 4'047'000 JPN average of Nagasaki Prefecture's residents (Yearly Income Guide, 2018). There is a difference in the family size between rural and city areas. The metropolitan areas birth rate is significantly lower than those of the countryside, which together with the education emigration towards cities, and the support of the students leaving these countryside areas, puts a financial burden to the already low-income communities (Coulmas, 2007).

Tourism industry

The tourism initiatives on Ojika are often used as case studies in Japan. The main tourism products of the island are ecotourism, home-stay programs and heritage accommodations. The statistics shown in Figure 3. from Nagasaki Prefecture Government (from hereon NPG) are showing a slow but steady rise in the visitors between the 2005 and 2016 (NPGa, 2017).

Accommodation capacity data is only available in yearly summarized numbers in the 2009 and 2016 time period (NPGb, 2017). Further local investigation is needed to assess the seasonal fluctuations, and accommodation capacity before 2009. The available capacity data shows a slight decrease in number of beds, which is attributed to the closing of establishments. Similar to the capacity graph, the lowest number of accommodation establishments was in 2010 with 36 establishments, a short rise to 46 establishments was followed by a sudden drop to 41 in 2016 and 38 in 2017 (at the last visit to the island). This capacity change impacts the number of guests in the peak seasons.

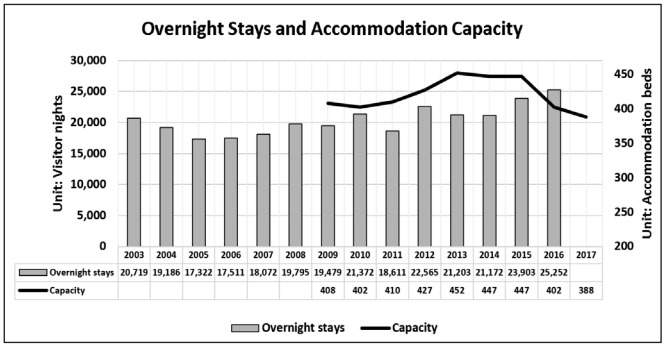

Figure 3. Ojika's tourism

The tourist spending in the destination from 2009 to 2017 is shown in Figure 4., together with the overnight stays in the same time period (NPG, 2017b). The year 2009 was taken as a base with 331.9 million Yen and the growth is expressed in percentage. In the last year of data available in 2016, 505.5million Yen was overall spending. The growth of spending clearly shows a higher rate than the growth of the nights spent at the destinations, which according to the town hall officials, can be contributed to a rising quality of guests and changing of the services on the island.

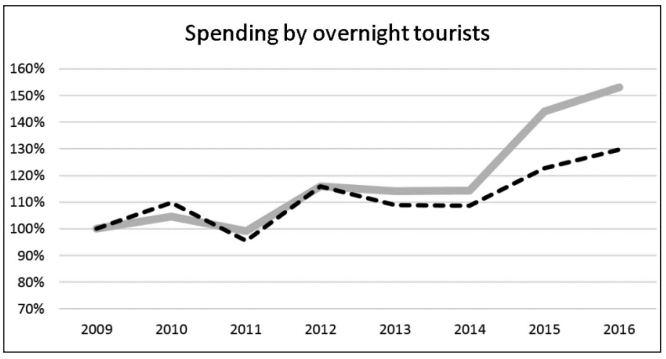

Figure 4 Overnight tourists spending

The change of spending patterns can be seen in Figure 5., based on the same reports. Accommodation is the largest part of the spending during the visit to the island, although from 2014 it is a shrinking portion of the whole, as is transportation. Restaurants and entertainment gains importance, and rises from 20% in 2009 to 27% in 2017.

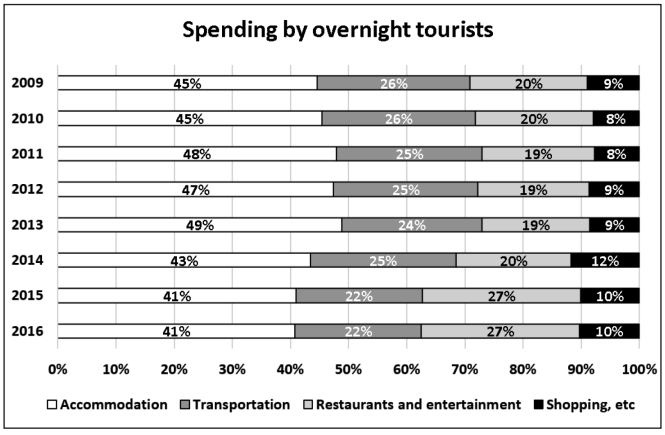

Figure 5 Spending patterns of overnight tourists

Ecotourism

A part of Ojika town (set of islands) is part of the Saikai National Park, and the abandoned neighbouring island of Nozaki has a number of hiking trails and an eco-camp. Nature experience programs started in 2001, targeting the primary school and junior high school groups on their annual traditional Japanese school trips. While the island has been abandoned in the 1970s, the building of the old school has been renovated and is used as an accommodation facility for these groups.

Homestay program

The island's inhabitants were always exposed to different cultures through travelers and traders. This had a long-lasting influence on the island's culture, and the local people are still open to outsiders and foreigners. This open-mindedness led to the establishment of the homestay or farm-stay program.

In 2006 the families providing home-stay accommodation established the Ojika Island Tourism Promotion Committee,

which in the next year merged with the eco-tourism (Nozaki Island) and the tourism association to form the Ojika Island Tourism Association.

The home-stay program gained international recognition after being selected as the "Best Home-Stay program in the world", by the People to People International Student Ambassador Program (USA), two years in a row (Local Government Finance, 2013). The program grew from an initial 7 families accepting tourist to about 50 families in 2010. The homestay, which is an important part of the island's tourism product the atmosphere of the community, is open for any tourist.

Kominka the heritage accommodation

The accommodation supply was insufficient, and with the current slow tourism concept, a decision has been made to restore old abandoned houses, and create a new type of accommodation. The kominka, which means "old house", is a perfectly restored house100year, while restored to its original beauty, has all the luxury amenities needed in a 21st-century accommodation (heated floors, double-glass windows, IH kitchen and other new technologies). The 6 kominka guest houses and a kominka restaurant was designed to attract a higher quality of tourist, with potentially higher tourism spending.

RESULTS AND DISCUSSION

The case study approach starts with a specific topic, but leaves space for the change of the research questions. The interview with different stakeholders of the local tourism industry helped bring up subjects that were unexpected, but crucial to the understanding of the current situations of the destination. While in some cases the opinion of private and governmental organisations differ, the major theme of insufficient supply of workforce, ageing community and the need for diversified income is mutual.

Current issues in the destination

Nokubi Church and World Heritage candidacy

The Nokubi Christian Church on the now abandoned island of Nozaki (in Ojika town municipality) is part of a group of churches and important sites, which have been included on UNESCO's tentative list of World Heritage, in 2007. The decision for the inscription was planned to be handed down in 2016, and the number of visitors already showed a steady increase according to the town hall (interview in 2015). While the acknowledgement of cultural heritage is important, it also creates a problem for the island.

Nozaki Island is uninhabited, and apart from the campsite at the restored elementary school buildings, there are no tourism (or any other) facilities. The island can be reached from Ojika with a short boat ride, but that is not the only route. There is a concern that visitors will avoid going to Ojika, and visit the heritage site directly from Goto Island and other bigger islands south from Ojika (different municipality). This would put the financial burden of maintaining the church and the roads on the Ojika municipality, without generating any income for the community. Currently, the local administration together with the tourism association are planning to introduce a "harbour fee", or "island entrance fee".

The local municipality (of Ojika) also plans to build a Visitor Center on the abandoned island as well as improve the quality and safety of roads leading to the heritage site as told by local officials (in 2015 during an interview).

The church was to be enlisted on the world heritage list in 2016, but due to insufficient historical documents, the UNESCO committee asked for additional information and postponed the decision. It is an unfortunate turn for the local tourism industry, but the committee will reevaluate the nomination in 2018.

Desertification

The shallow underwater plateau around the island that gave a rich habitat to a diverse ecosystem is in danger of desertification due to changes in the global and local environment. According to research conducted by the local town hall (stated in a 2015 interview), the main reasons for the change of the ecosystem are

- global climate change,
- industrial development of China and Korea,
- overfishing,
- the agricultural development of the island.

This list reflects the local-global dimension of ecological degradation. While Ojika town cannot do much in terms of global climate change and the East Asian region's development, the altering of the local ecosystem through overfishing and deforestation problems can be addressed.

The island's native forests were all cut down and replaced by field for cattle as well as rice paddies and fields for crops. The small remaining area covered by forest is mainly alien species to the island, brought in from outside during the flourishing trade routes and foresting industry initiatives in the past 1000 years. While Ojika town and its islands are partly in the Saikai National Park, the preservation activity aims to keep alive the current flora, and there is no decision to restore the indigent forests. The agricultural land-use also causes fewer minerals to flow into the sea, which would be vital to have a flourishing sea life as told by officials from the town hall.

This slow change had its impact on the fishing industry, as it has been failing to contribute to the local economy at the same level as previously. Stress is also put on the fisherman families to look for other income options. One of the phenomena that show this change is that more and more longstanding fisherman families urge their children not to get into the family business. The result is that the average age of fishermen is slowly rising and once important income generating industries such as abalone diving are now nearly non-existent on the island.

FINDINGS

Ageing community and migration

The ageing of the community, together with the migration of young people towards the big cities, has a considerable impact on the tourism industry. Shrinking population causes declining service quality in some areas (transport, retail, etc.) and shrinking of the potential workforce population.

A more direct impact can be observed on the supply of tourism services accommodations and catering industries. More and more shops close down because of second retirements (as some of the owners started their business after retirement) or reduce services simply because the workload is too much for them or their ageing employees.

Although a new accommodation started business in 2015, the tourism industry members and the town hall are on the same opinion that there is a lack of supply of accommodations, and this problem will get worse in the following years.

While the population of the island, looking at the official numbers is 2456 (OTH, 2018), according to the residents, the real number is lower due to residents leaving the island for the university, but not changing their resident data. This means that, while the official statistics show them as "actively living on the island", they are not part of the local workforce (as they live near the universities, sometimes 800km away). This shows that the available capable workforce for the tourism industry to build on its expansion is even less than the official population numbers suggest.

Home-stay

The home-stay program is an important part of the island's tourism product. The chance to spend a few days in a real rural Japanese home and experience the everyday life of a farmer or a fisherman is interesting both to foreigners and junior high school students from major Japanese cities such as Osaka and Tokyo. Also, this type of accommodation gives a chance for the community to be more involved in the tourism industry. Although through the home-stay program, the destination's capacity was raised, which is crucial in the peak season, this supply is not flexible. Unlike hotels or other types of mainly business oriented accommodations where additional facility investment can expand the capacity, in the case of home-stay, the limit of the service is the community itself. The number of facilities - in this case, families - cannot be raised by investment.

Furthermore, while the demand for accommodations and this type of experience tourism is growing in the destination, the number of families participating is shrinking due to the shrinking of the population and the decreasing number of households. The ageing of the community also makes some households give up this secondary income (of tourism), as taking care of their elders is a priority to them, as stated by the local town hall.

Government initiatives for population grow

The local government started a few initiatives to generate „U-turn" (former Ojika residents returning to the islands) and „I-turn" (new people moving to the island) with mixed results. These programs were connected to tourism and an agricultural school (with free land-use after graduation).

The initiative of setting up the tourism association and developing Ojika as a tourism destination yielded results, as some returned to the island after working in big cities. Also, some of the employees of the association are newcomers, born and raised outside of the island.

Still, in the face of a declining population, raising population numbers is not a realistic goal. The town hall estimates that in the next 10 years the population will further drop to a level of 2000 inhabitants, and some predict that it can be stabilised around 1'500 people. This would mean further abandoned houses, villages, islands, and shrinking public services.

Volunteers and interns in the tourism industry

One of the new accommodation is dealing with strong seasonality in an innovative way. While the owner and his family is a fixed workforce in the business, during peak periods extra workers are also needed. The company is hiring part-time workers to fill the need, but in a small and ageing community, finding the right employees is difficult. The accommodation is experimenting with a different way to fill the gap between available and needed labour, in the form of a volunteer and internships program. Through the internet, foreigners who want to experience rural Japanese life and rural tourism are invited to come to the island to help in the daily routine of the accommodation. This is an effective way to adjust the workforce to the seasonality of the market, without the negative effects of irregular employment on the community.

Families with secondary income

There is pressure on the community of the island to change its traditional way of living and adapt to the new circumstances. According to the local town hall, the drop in food product prices and the globalisation of the food market is pushing the income of the farmers and fishers lower and lower.

In the future the members of the community will have to be involved in more than one industry to reach a minimum level of quality of life. The local town hall has started a conversation with the residents and is promoting to diversify their income, and suggesting to expand into different industries. The farm stay program is one of the initiatives, which have set an example for other local families. The ratio of the secondary income at families, which are active in the farm stay accommodation service in all seasons, can reach 30% of the total income, as stated in a town hall interview.

This strategy of diversification strengthens the community's resilience, as the existence of secondary income source gives

flexibility to the families and the community. The multi-income families who enter the tourism industry through home-stay or other services, can use their agricultural or fishery income to soften the impact of tourism demand seasonality.

Follow-up

The follow-up after the interviews in 2015 and 2016 was a short visit to the island in 2017. As part of the preparation for the UNESCO World Heritage candidacy, an Ojika resident officially moved to the island, changing its status of an abandoned island. This was important for the local government, as infrastructure development is difficult on islands without residents. The visitor centre of the island has been completed, providing information on the island's wild nature (being part of the Saikai National Park), and some information on the abandoned villages. It is also a shelter for visitors who are stranded on the island in case bad weather makes it impossible for the ferry to take them back the main island. An old Japanese traditional house was rebuilt, which belonged to the government official responsible for the community in the late Edo early Meiji period.

The volunteer and trainee program, where accommodations try to give an interesting and important rural Japanese experience tourism experience to foreigners is successful, and seeing the potential benefits, more accommodations are considering implementing it.

The local tourism association will have a foreign employee starting in the new fiscal year (from April of 2018) as a preparation for the possible growing number of foreign visitors. This hiring is a continuation of the I-turn process, where the local government is trying to attract people from outside of the island, to work and live in Ojika.

CONCLUSION

This paper aimed to investigate the current situation in rural tourism destinations in Japan, amidst the plans of the Japanese government to double the inbound tourist numbers. Along with the new targets for 2020, the government also announced a program to promote the rural areas to the foreigners. While tourism is seen many times as a possibility for rural revitalisation, structural issues can put a halt on development.

The case study of Ojika town, a rural island destination, shows that there are difficulties in developing the tourism industry supply in such small communities. The ageing society, migration towards cities are some of the problems that can put a strict limitation on the tourism industry's capacity.

Ojika town tried to compensate for the lack of workforce (and the lack of accommodation facilities) by innovatively trying to get the community more involved in the tourism. Minpaku, the home-stay program, became part of the destination brand and also an important secondary income for the fisher and agriculture families. However, the home-stay program already reached its maximum capacity and also started shrinking.

The process of creating a growth strategy for the tourism industry has to be based on the present situation. The example of Ojika town shows that detailed information is needed, not just about the tourism aspect of a destination, but also about the community behind it.

The tourism industry cannot be separated from its surroundings, when assessing a destination, information is needed on its surroundings. These community and socio-culture information have to be included in the strategy-making process. In some cases, before tourism capacity development, the connected infrastructure - in this case, the available workforce population - has to be developed first. The central government's plans for doubling the tourist number should also consider the supply limitations of certain destinations.

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SCIENTIFIC PAPER

A QUANTITATIVE ASSESSMENT OF THE RURALITY AND AN EFFICIENCY ANALYSIS OF EMIGRATION IN ROMANIA

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Abstract: *In Romania, as in many other Eastern European countries, the early 1990s were marked by a significant emigration from the countryside as a consequence of the transition from a centralised economy to an open one and due to key changes in the political framework. The permanent emigration has predominantly been concentrated in rural areas where multiple socio-economic variables such as GDP per capita, unemployment, and public financial subsidies aimed at supporting people at risk of severe deprivation and poverty have all had a direct effect on rural depopulation. The rurality is a complex theoretical construct comprising many items and variables and is, therefore, difficult to define in a concise manner. The aim of this paper is to assess the evolution of emigration in Romania between 2001 and 2016 through a quantitative approach, estimating an index of rurality for the same period composed of a set of socio-economic variables having a direct or indirect nexus to it. In the first phase of research, a matrix of correlation and a multiple regression model has been used in order to estimate the direct links among all investigated variables. Following the quantitative methodology, in the second phase Partial Least Square Structural Equation Modelling (PLS-SEM) has been used in order to assess the main cause-effect relationships among a few selected endogenous variables and a set of socio-economic items. Furthermore, using a non-parametric Data Envelopment Analysis (DEA) output-oriented model, this research has assessed the efficiency in terms of permanent emigration from Romania estimated as an output to minimise and not as an output to maximise, as investigated by traditional efficiency approaches. In terms of efficiency, financial subsidies allocated by national authorities and the level of per capita Gross Domestic Product have acted directly on the level of emigration. The index of rurality in 2016 has been influenced in particular by the pluriactivity in farms in terms of agritourism, the dimension of farms in terms of land capital endowment, and the level of GDP per capita.*

Keywords: *Partial Least Square Structural Equation Modelling, Agritourism, Data Envelopment Analysis, Rural Areas.*
(JEL Classification: *Q10; Q18*)

INTRODUCTION

Following the collapse of the Soviet bloc, many formerly communist states that, since the first and second enlargements in 2004 and 2007 respectively, now belong to the European Union, suffered from significant outward emigration, predominately from rural territories characterised by great socio-economic unbalances compared to urban areas (GALLUZZO, 2016a; 2016b; 2016c). The flow of emigration from Romania to other countries has largely been oriented along an East-West axis, rather than a South-North one, or vice versa, as occurred in other European countries such as Italy in the last century, with a notable incidence of whole family groups involved in the emigration phenomenon (BRADATAN, 2014). Focusing analysis on the destination countries, the greatest flows of emigrants have been to Italy, Spain, Germany, and other close neighbours. The permanent emigration has affected Romanian regions differently, and has particularly affected rural areas where the level of infrastructure serving the villages is very low and where there are many scattered farms with poor land capital endowment. These farms are largely categorised as semi-subsistence or subsistence according to the system of classification proposed by the European Union, and most aren't able to produce a level of farm income above 1 ESU (European size-unit), which is an economic measurement of the size of farms equating to □1,200 (GALLUZZO, 2017a; 2017c; 2016a; 2016b; HUBBARD et al. 2014; BURJA, 2011; GIURCA, 2008). According to these authors, semi-subsistence or subsistence farms are predominately only able to satisfy their own contingent needs and are not market oriented.

Completely different is the issue of temporary emigration,

which is sensitive to various parameters such as the context, the village of origin, and other socio-economic variables and expectations that are able to drive the emigration, even if scholars have found that the recent increase specifically in female emigration has notably been met with public strategies tailored to the social protection of several Romanian rural territories (SANDU, 2005a; 2005b; 2007; PIPERNO, 2012). In general, comparing different Romanian NUTS II counties, the district of Bucharest-Ilfov emerges as having suffered less socio-economic marginalisation and territorial disparities than Eastern and Southern regions (SURD et al., 2011). This implies a different impact of the financial supports allocated by the European Union before and after the enlargement in 2007, corroborating the hypothesis according to which the poorer a rural area is, the more modest its development will be (GALLUZZO, 2017a; 2017b; 2018a; 2018b; SURD et al., 2011). Therefore, the focus of the National Rural Development Plan on stimulating measures of diversification in farming through agritourism, rural tourism, and the EU's LEADER initiatives, which is financed under the second pillar of the Common Agricultural Policy, represents a good opportunity for rural areas to reduce the socio-economic marginalisation suffered in many deprived contexts, even if the level of GDP per capita remains one of the most significant factors in the mitigation of socio-economic disparities and improving the environmental protection and sustainability of rural territories (BURJA & BURJA, 2014; GALLUZZO, 2017a; 2017c; IORIO & CORSALE, 2010; ABRHAM, 2011).

In a perspective of the convergence of socio-economic development, Romanian rural areas have completely changed their development targets in an effort to reduce territorial disparities and inefficiency which are more pronounced within Romanian counties and regions, particularly rural ones, than in other new EU member states which joined in the enlargement of 2004 and which, in contrast, have seen a growth in their average GDP (ABRHAM, 2011; LEFTER & CONSTANTIN, 2009). According to these latter scholars, the level of GDP per capita has corroborated its own role in the economic growth of Romanian rural areas and in reducing the permanent emigration from the countryside.

The key purpose of this research was to assess through a quantitative approach which socio-economic variables have had the biggest effect on the permanent emigration from Romanian regions. Furthermore, using a quantitative methodology, direct correlations have been estimated among certain socio-economic variables such as GDP in the primary sector, social protection subsidies, dimensions of agricultural areas, rate of unemployment, expenses in research, total subsidies allocated by public administrations for social support, population growth, the spread of agritourism, life expectancy, and permanent emigration from Romania. The investigation was focussed on the period from 2001 to 2016, and has utilised data taken from the TEMPO time series dataset published by the Romanian National Institute of Statistics on its own website.

There were two main questions of the study. Firstly, have socio-economic variables and public policies aimed at mitigating socio-economic marginalisation influenced the phenomenon of permanent emigration in Romania? Secondly, is it possible to estimate an index of rurality using three endogenous variables such as social, income, and welfare factors? The last phase of this research has also assessed the output inefficiency in Romanian counties in terms of permanent emigration in order to evaluate which inputs have been fundamental in reducing it (GALLUZZO, 2018d).

THEORETICAL BACKGROUND AND HYPOTHESES

The literature review has highlighted many quantitative studies that have assessed the impact of financial subsides to Romanian farmers (GALLUZZO, 2016a; 2016b; 2018b; 2018c); in the framework of multivariate analysis, some scholars have defined a quantitative estimator able to evaluate the rurality by investigating in depth how public supports allocated under the Common Agricultural Policy have acted in the framework of multifunctionality (GALLUZZO, 2018b; FINCO et al., 2005). In contrast, it is not so common to find the use of a quantitative approach based on the PLS-SEM in studies carried out in the primary sector aimed at estimating the rurality and identifying which items have acted on the rurality construct.

From the literature, it is not easy to propose a unique and holistic theoretical definition of rurality (CLOKE, 2006; WOODS, 2010), even if several researchers have investigated the rurality and a specific index directly correlated to it in depth using a quantitative approach (KENDALL, 1975; CLOKE, 1977; CLOKE & EDWARDS, 1986; PRIETO-LARA & OCAÑA-RIOLA, 2010; OCAÑA-RIOLA & SÁNCHEZ-CANTALEJO, 2005), due to specific research targets that in some cases have not been able to capture the direct or indirect correlations among variables and the cause-effect relationships (CLOKE, 1977; CLOKE & EDWARDS, 1986; PRIETO-LARA & OCAÑA-RIOLA, 2010; OCAÑA-RIOLA & SÁNCHEZ-CANTALEJO, 2005).

METHODOLOGY

The core objective of this research was to assess which socio-economic variables acted on the permanent emigration from Romania from 2001 to 2017, with the aim, also, of defining an index of rurality on the basis of different items directly or indirectly correlated to the rurality. The last part of this research has assessed the minimisation of output, made by the permanent emigration in a non-parametric output-oriented efficiency approach, which runs contrary to other studies whose aim is to maximise the output (GALLUZZO, 2018d).

In order to assess the main correlations and relationships between emigration and certain socio-economic and agricultural variables, a multiple regression model has been used in the first phase of quantitative assessment, and, with the aim of estimating the index of rurality and cause-effect relationships among items and endogenous variables, Partial Least Square Structural Equation Modelling (PLS-SEM) has been used in the second phase.

The assessment of regressors in the multiple regression model is represented in algebraic form (VERBEEK, 2006) as:

$$Y = X\beta + \varepsilon_i \quad (1)$$

where i = 1, ..., n, Y is the dependent variable and is the statistical error (VERBEEK, 2006; ASTERIOU & HALL, 2011; BALTAGI, 2011). In the expression above, in the multiple regression model Y and ε_i are vectors with n-dimensional, X is a matrix of independent variables with a dimension n x k and β is a set of estimated parameters able to explain their own impact on the emigration in Romanian counties from 2001 to 2016 (VERBEEK, 2006; ASTERIOU & HALL, 2011; BALTAGI, 2011). The estimation of all parameters in the multiple regression model has been made using the GRETL opensource software. In the multiple regression model, the basic assumptions were (VERBEEK, 2006; GALLUZZO, 2017a; 2017b): the statistical error i has null conditional mean given X_i, that is $E(\varepsilon_i|X_i) = 0$; (X_i, Y_i), i = 1, ..., n are extracted independently and identically distributed (i.i.d.) from their joined distribution; (X_i, ε_i) have finite fourth moments which are not zero.

In this paper, the weighted least squares (WLS) approach has been used in the multiple regression model on account of a non-equal variance among variables assessed in the multiple regression approach; hence, a more efficient estimator has been obtained by a down weighting of the squared residuals in all observations which have pointed out large variances (KOENKAR & BASSET, 1982; GREENE, 1993).

In the second stage of the analysis, the assessment of the cause-effect model in a pattern of rural development growth has utilised Structural Equation Modelling (SEM) modified following some specifications proposed in the Partial Last Square Structural Equation Modelling (PLS-SEM) which fits well to the features of the analysis and its own purpose (GALLUZZO, 2018c; HAIR et al., 2016). In fact, the non-parametric PLS-SEM model is based on several non-restrictive underlying assumptions, is suitable for estimating a modest sample size of farms, and, moreover, there are no exact and a priori model specifications in the estimated model (HULLAND, 1999; HAIR et al., 2016; AWANG et al., 2015). Considering the limited number of socio-economic variables being assessed in a small sample of data, as is the context of this research, the Partial Last Square Structural Equation Modelling fits well to the predictive purpose investigated in this paper (VINZI et al., 2010; HAIR et al., 2016). This research has used the Smart-PLS version 3.2.7 software under student licence (RINGLE et al., 2005).

The Structural Equation Modelling describes the causality among latent variables through an iterative methodology aimed at estimating the internal and external correlations and values in latent variables (HOYLE, 1995; HULLAND, 1999; HAIR et al., 2016; VINZI et al., 2010). According to these latter authors, the partial estimation has different blocks of variables which alternates simple regressions and multiple regressions. In the PLS-SEM, it is possible to estimate two different submodels: an inner model made up of certain interactions between the dependent and independent variables, and the outer model comprising various main relationships between latent variables and their factors or indicators (HOYLE, 1995; WONG, 2013; GALLUZZO, 2018c). As described in the theoretical approach, the Structural Equation Model variables in the model have been stratified into exogenous variables, which have path arrows pointing outwards, and endogenous variables, which have one or more arrows pointing towards them (HOYLE, 1995; HULLAND, 1999; HAIR et al., 2016; VINZI et al., 2010; WANG et al., 2015).

In order to estimate the efficiency in terms of minimising the produced output, being the permanent emigration, a non-parametric approach as proposed in the DEA (Data Envelopment Analysis) method has been used in an output-oriented model. The main purpose of the DEA is to assess a hypothetical function of production, with the distance from the frontier of this function being the index of inefficiency or efficiency (BIELIK & RAJCANIOVA, 2004).

For the purposes of this paper, in contrast to traditional literature, the higher the distance from the optimal function of efficiency, the lower will be the output, or rather the permanent emigration, with positive impacts on Romanian counties (GALLUZZO, 2018d). The efficiency has been estimated through a non-parametric model applied to specific assumptions of a variable return to scale (VRS) and of a constant return to scale (CRS) in an output-oriented model (FARRELL, 1957; BATTESE, 1992; COELLI, 1996) using DEAP 2.1 software.

Table 1. Descriptive statistics in all investigated Romanian counties from 2001 to 2016. (ro/shop/?lang=en)

Variable	Unit	Minimum	Maximum	Mean	Std. deviation
Emigrated people	n°.	15.00	6,043.00	308.49	490.26
Agricultural GDP	Millions of lei	14,803.00	22,864,356.00	3,451,868.43	3,924,931.01
GDP per capita	lei	1,006.00	178,659.00	10,805.50	17.801.16
Social protection financial supports	Millions of lei	58,049.00	293,956,285.00	32,855,187.97	34,489,287.32
Agricultural area	ha	3,052.00	702,262.00	349,791,12.00	121770,564.00
Unemployed people	n°.	1,962.00	36,921.00	12,939.52	6,528.17
Expenses in research	Millions of lei	0.00	4,645,678.00	86,304.42	313,948.41
Public subsidies	Millions of lei	7.00	1,004,465.00	30,053.87	79,885.49
Population growth	n°.	-7,289.00	2,740.00	-1,099.64	1,212.52
Agritourism	n°.	0.00	352.00	31.52	50.82
Life expectancy	Years	67	78	73.089	1.906

Source: author's own elaboration on data from the TEMPO timeline series available on the website http://statistici.insse.

RESULTS AND DISCUSSION

Main descriptive statistics in 672 observations reveal that more than 300 people have permanently emigrated every year from each Romanian county and over the same period there has been a significant drop in population growth (Tab. 1). On the other side, agriculture and the financial supports allocated under national and local authorities aimed at social protection have both had a notable impact in mitigating the overall incidence of outward emigration.

Table 2. Main correlations among all investigated variables. In bold value with a significance at 1%

	Emigrated people	Agricultural GDP	GDP per capita	Social protection financial supports	Agricultural area	Unemployed people	Expenses in research	Public subsidies	Population growth	Agritourism	Life expectancy
Emigrated people	1	-0.083	0.814	0.460	-0.216	0.207	0.521	0.125	-0.075	0.053	0.319
Agricultural GDP	-0.083	1	-0.215	-0.483	0.223	0.269	-0.022	0.615	-0.003	-0.145	-0.531
GDP per capita	0.814	-0.215	1	0.613	-0.282	0.173	0.509	-0.044	-0.093	0.039	0.447
Social protection financial supports	0.460	-0.483	0.613	1	-0.170	0.212	0.134	-0.351	-0.043	0.148	0.486
Agricultural area	-0.216	0.223	-0.282	-0.170	1	0.069	-0.368	-0.064	-0.142	-0.099	-0.167
Unemployed people	0.207	0.269	0.173	0.212	0.069	1	0.211	0.265	-0.188	0.006	-0.067
Expenses in research	0.521	-0.022	0.509	0.134	-0.368	0.211	1	0.562	-0.227	-0.042	0.125
Public subsidies	0.125	0.615	-0.044	-0.351	-0.064	0.265	0.562	1	-0.157	-0.097	-0.354
Population growth	-0.075	-0.003	-0.093	-0.043	-0.142	-0.188	-0.227	-0.157	1	0.226	0.016
Agritourism	0.053	-0.145	0.039	0.148	-0.099	0.006	-0.042	-0.097	0.226	1	0.322
Life expectancy	0.319	-0.531	0.447	0.486	-0.167	-0.067	0.125	-0.354	0.016	0.322	1

Source: author's own elaboration on data from the TEMPO timeline series available on the website http://statistici.insse.ro/shop/?lang=en

Research outcomes in the matrix of correlation have underlined a direct link between the variables emigrated people and GDP per capita, social protection financial supports, unemployed people, expenses in research, total subsidies allocated by the local and national authorities, and life expectancy (Tab. 2). In contrast, an indirect link has been found between the variable emigrated people and the variables population growth, and agricultural areas. As such, it can be said that in Romanian counties where emigration is higher, population growth is lower. In general, findings have fitted into the framework in which emigration is a phenomenon of counties characterised by modest land capital endowments, which condition drives people to leave subsistence farms in search of better standards of living.

Weak and indirect correlations have been found among the variable agritourism and the variables GDP in the primary sector, agricultural areas, and public subsidies allocated by national and local authorities.

Findings in the multiple regression model assessed by the weighted least squares (WLS) method, which has been fundamental in reducing the issues of heteroscedasticity in the dataset, reveal that emigration is directly correlated to the independent variables subsidies allocated by national authorities in favour of social protection. Emigration correlates directly to the variables agricultural area, unemployed people, life expectancy, and agritourism in Romanian rural areas (Tab. 3). In contrast, gross domestic product in the primary sector does not have any effect on the dependent variable permanent emigration from Romanian counties. The value of R2 and adjusted R2 are equal to 0.77 hence, an increase of variables in the model has not implied significant changes in the variance explained by the multiple regression model.

Table 3. Main results in the multiple regression model. Dependent variable emigration

Variables	Coefficient	St. error	T value
Constant	-649.25	294.17	-2.207**
GDP primary sector	-2.95 e-06	2.76e-06	-1.06
Social protection subsidies	-1.06 e-06	3.17 e-07	-3.35 ***
Agricultural areas	0.00036	6.03 e-05	5.98***
Unemployed people	0.00211	0.00091	2.33**
Research expenses	0.00011	3.36 e-05	3.41***
Total subsidies for social support	0.00063	0.00016	4.03***
Population growth	0.026	0.0051	5.091***
Agritourism	0.27	0.13	2.082**
Life expectancy	8.16	4.01	2.03**

** means significance at 1-5%; *** significance at 1%

Source: author's own elaboration on data from the TEMPO timeline series available on the website http://statistici.insse.ro/shop/?lang=en

Table 4 presents the different endogenous variables estimated in the Partial-Least-Square Structural Equation Modelling in all Romanian counties for two different years of study, namely 2001 and 2016, using the data published in the TEMPO dataset of the Romanian Institute of Statistics (INSSE).

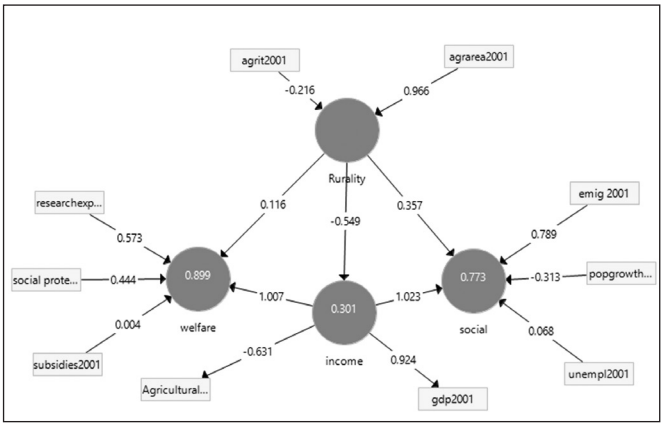
Research findings in a preliminary assessment of the index of rurality in 2001 highlight that the latent variable income acted directly on the endogenous variable index of rurality, even if the items agricultural areas and the item number of agritourisms had greater impacts. This implies that on-farm activities and the diversification stimulated by financial subsidies allocated by the EU under the second pillar of CAP or under the LEADER initiative have influenced the rurality index (Fig. 1).

Table 4- Endogenous variables and items investigated in PLS-SEM approach in all Romanian counties

Endogenous variable	Items 2001	Items 2016	Description
Rurality	Agrit2001	Agrit2016	Romanian farms specialised in agritourism
	Agrarea2001	Agrarea2016	Land capital in terms of usable agricultural areas
Welfare	Resercherexp	Resercherexp	Public funds for research in Romania
	Socialprote	Socialprote	Financial subsidies allocated to supporting social protection and people at risk of social exclusion
	Subsidies2001	Subsidies2016	Total subsidies allocated by public authorities
Income	GDP2001	GDP2016	Gross Domestic Product produced by all Romanian counties
	Agricultural	Agricultural	GPD produced by the primary sector
Social	Emig2001	Emig2016	Permanent emigrated people from Romania
	Popgrowth	Popgrowth	Increase of people in each year of study
	Unempl2001	Unempl2016	People without any job

In regards to the endogenous variable social, there was a direct and significant impact from the variable emigrated people from Romania in 2001. Furthermore, the item GDP had a direct and important impact on the endogenous variable income, and GDP produced by the agricultural sector had a negative impact on the endogenous variable income. Investigating the different latent variables in depth, findings reveal that the items permanent emigration and population growth have acted partially on the index of rurality. The values of R2 in the latent variables social and welfare were above 0.75 meaning that more than 75% of the variance is explained by the construct in the model.

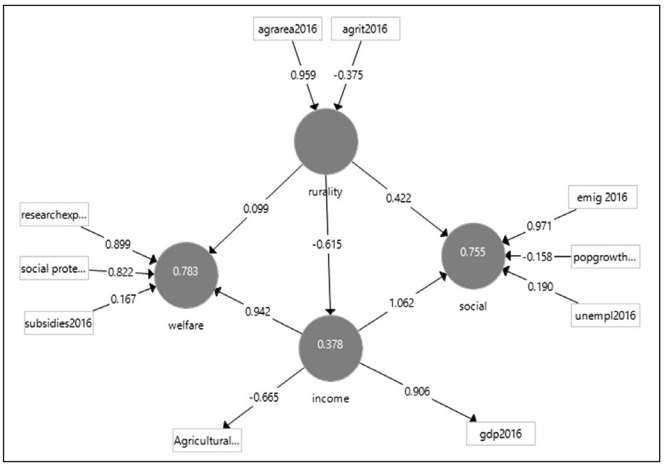
Figure 1- Main results of the rurality index in 2001 in all Romanian counties.



Source: author's own elaboration on data from the TEMPO timeline series available on the website http://statistici.insse.ro/shop/?lang=en

Focussing attention on the year 2016, findings reveal that an increase in agritourisms has had a significant relationship on the index of rurality (Fig. 2), and financial subsidies allocated by the Romanian public authorities for social protection and for research have had meaningful correlations to the latent variable welfare. In general, the financial subsidies allocated under the Common Agricultural Policy have played a positive role in the growth of agritourism in Romania, with positive impacts on the index of rurality. In both PLS-SEM models assessed in 2001 and in 2016, with the sole exception of the latent variable income, the level of R2 in the endogenous variables social and welfare exceeded 0.70 meaning that over 70% of the variance in both endogenous variables is explained by the investigated items.

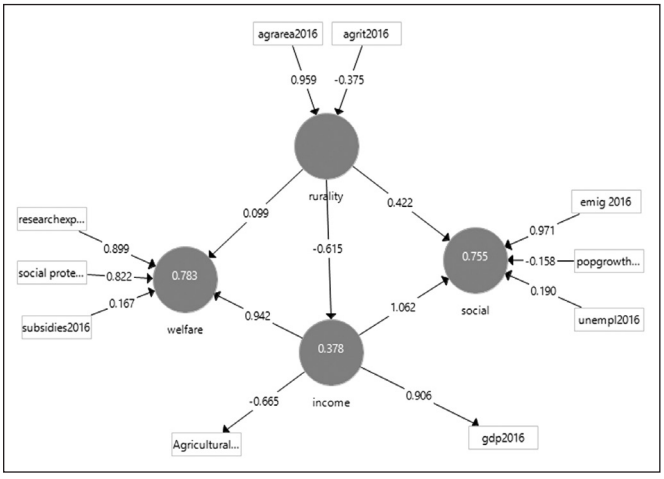
Figure 2- Main results of the rurality index in 2016 in all Romanian counties.



Source: author's own elaboration on data from the TEMPO timeline series available on the website http://statistici.insse.ro/shop/?lang=en

The findings in the efficiency analysis of the DEA output oriented model intended to estimate the efficiency in constant and variable returns to scale and also considering technical efficiency show an increase in the level of the output, that is the level of emigration over the period of investigation (Fig. 3), which implies a sharp growth of emigration, particularly following the economic crises and the recession through the years 2008-2016. Focusing in depth on the different level of emigration in all Romanian counties, the research outcomes reveal differing scenarios. In fact, Romanian counties in the south where the GDP per capita is lower have suffered the highest level of emigration, and consequently the highest level of inefficiency.

Figure 3- Main results in the DEA analysis of efficiency output oriented model. CRTS, VRTS, and TE signify constant return to scale, variable return to scale, and technical efficiency, respectively.



Source: author's own elaboration on data from the TEMPO timeline series available on the website http://statistici.insse.ro/shop/?lang=en

CONCLUSION

The situation in Romanian rural areas highlights the continuing need to increase the level of infrastructure, and reveals the positive impact the growth in agritourism has had on the rurality index by improving living conditions in the Romanian countryside. In fact, the main consequence of improvements in infrastructure has been a significant drop in emigration, corroborating the role of local public administration and public financial support in mitigating socio-economic marginalisation in disadvantaged rural areas. This research has also corroborated the complexity of the variables forming a holistic definition of rurality through a quantitative approach; hence, it is essential to fine-tune actions in rural areas in function of the features and socio-economic bottlenecks which are typical of different rural territories.

To recapitulate, financial subsidies allocated under the Common Agricultural Policy and other initiatives of the European Union such as LEADER have, in the framework of rural development, been pivotal and irreplaceable in reducing the socio-economic marginalisation of rural areas and their own socio-economic divisions. In general, a low level of land capital endowment and of infrastructure are the most significant factors in the socio-economic divide between rural and urban areas, and for the next seven-year period of the Rural Development Plan, 2021-2027, it is important to increase the amount of financial support allocated under the second pillar, rather than reduce it, as some new EU budget constraints seem to require. In the light of Brexit, it is important to focus the attention of stakeholders on a different allocation of financial subsidies allocated under the second pillar of the CAP to avoid reducing the total budget for rural development, since even a modest decrease in the level of public financial support available to rural areas will have a huge negative impact on the socio-economic development of rural territories. From this perspective, the European Union hopes that a direct engagement of local authorities in a bottom-up approach is able to ensure a cohesive and shared rural development continues; hence, it is important to stimulate local rural communities to exercise due diligence and seek sustainability in pursuing socio-economic growth.

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SCIENTIFIC PAPER

MODERATING INFLUENCE OF TRAINING AND DEVELOPMENT ON ENTREPRENEURIAL PERFORMANCE

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Abstract: *This study assessed the moderating effect of training and development on entrepreneurial performance of Micro, Small and Medium Enterprises (MSMEs) in Nigeria considering the Bank of Industry and Small and Medium Enterprises Development Agency of Nigeria (SMEDAN). Two hypotheses were tested in this study reflecting training and development in Nigeria and Ethical practices of Training and Development impacts on behavioral outcomes of entrepreneurs. The paper puts to test, the preceding assertions with the aid of Kruskal Wallis test. From the test, the study refutes the former assertions on the reasoning that P-values were less than 5% level of significance. This showed that the impact of ethical training and development would be more significant if the young entrepreneurs had earlier exposure from secondary to tertiary education level to make better entrepreneurs in Nigeria. The study observed that the Nigerian educational system has contributed positively to the area of training and development which has enhanced entrepreneurial performance in Nigeria. The study recommends that training and development programme should focus on developing creative or innovative individuals who can help to move the nation forward. A Self-reliant person is a creative individual.*

Keywords: *Training and Development, Entrepreneurial Performance, SMEDAN.*
(JEL Classification: *M53, M1*)

INTRODUCTION

The need for entrepreneurs to pay attention to training and development has become necessary because of challenges beings faced by entrepreneurs in their various business environment (Shaker, 2011; Thomas 2013; Subchat, 2008). Stillman (2003) defined entrepreneurship education as an effective means of providing human beings with skills relevant to social needs of sustainable national and individual development. Harnessing of other factors for formation of business venture is made possible in youths through the idea and skills acquired in entrepreneurship education. Such other factors are capital, site of a business enterprise, material needed among others (Spender, 2002). Entrepreneurship education has been viewed as an effective tool for entrenching sustainable development (GEM, 2008). Kowo & Kadiri (2018) asserted that entrepreneurship education inculcates in youths the efficient methods of distributing goods and services to the consumer and the desirable social and cultural behaviors. Improvement of Managerial efficiency entrepreneurship education equips the recipients with relevant skills, behavior, business attitude and curbs managerial deficiency if properly channeled. Entrepreneurship education creates glaring relationship between institutions and industries as the operators of industries allow the students of entrepreneurship education to gain practical work experience.

All employees need some form of training that gives them a wider general knowledge of new techniques that will be beneficial to both the employer and employees. Klapper (2004) posit that effective training programme can improve efficiency and morale, develop supervisors and decrease amount of supervisors needed. Ogundele (2000) perceived

entrepreneurship education as the greatest force that can be used to achieve quick development of the nation's economic resources. Any work that involves physical exertion is still frowned at in the country. Snyder (2011) Opined that efficient management of resources entrepreneurship education inculcates in individuals skills enable them to manage resources efficiently. Waste and misuse of resources that usually have influence on business are properly guided against; because of the knowledge of efficient application of resources which entrepreneurship education equips individuals. Stewart (1998) emphasized that the objectives of management training is to improve current performance and provide trained staffs, skills to meet present and future needs. He further explained that when training is effective individual need will be determined. Management training yield new techniques, provide for succession, thus ensuring that qualified replacements are available, lead to reduction in waste, scrap rate and improve machine utilization (Ogundele, 2012).

The quality of human resources that is available in an entrepreneur organization depends on the processes of recruitment, training and development of the workforce. The procedure of recruiting good staff into the organization, how to train new employees to be useful in their contribution to the organization and the development of management staff should be the concern of all organizations (Ajonbadi, 2017). Ogundele (2005) emphasized on the need for management and other training and development institution in Africa to focus on developing creative or innovative individuals who can help to move the nation forward. Otokiti (2013) posit that except employees are disciplined and exhibit ethical behavior, all training and development efforts will produce little or no results. It is now an important phenomenon for entrepreneurs to utilized effective management training which is a source of wealth for entrepreneurial growth and expansion of new markets in the regions (Starr & Fondas, 1992; Stefanovic et al, 2009; Galloway & Brown, 2002).

MATERIALS AND METHODS TRAINING AND DEVELOPMENT

Ajonbadi (2017) postulates that training and development is the process of modifying behavior in organizations which represent entrepreneurial function. Decades of research considered training as the organized procedure by which people learn knowledge or skills for a definite purpose. Training means to educate someone narrowly by instruction drill and discipline (Brown, 2002). Snyder (2011) regarded training as applying principally to the improvement of skills and hence of learning how to perform specific tasks. Training is the systematic development and improvement of an individual's ability to perform specific task or job (Shaker, 2011; Thomas, 2013). Entrepreneurs are agent of social technological and economic changes, entrepreneurial training and development will encourage Nigerian to become job creators, rather than job seekers. It will equip them with skills for innovation and improvement of ideas and skills (Olayemi & Ogundele, 2004). Adewunmi (2004) posit that within the context of globalized economy, nation states and their economies are being reorganized into one big production unit, where transnational corporations are free to operate virtually on their own terms and without much regard to national legislations. Ogundele (2004) observes that for success of National Economic Empowerment and Development Strategy (NEEDS) we require a new development effort, this he calls spiritual capitalism, which will involve among other things, calling out the best from every Nigerians.

Armstrong (2009) notes that globalization has several elements with varying contending demands on national development; this range from self-reliance, ethics or discipline behavior, man power development, entrepreneur stream development to several others. Training brings improvement to employee's skills, leadership with vision and not mafia managers will cap these suggested improvement (Moberg, 2014; Tarvis, 2017). Ethical training is supposed to have immediate and direct impacts on behavior modification; this is because it is concerned with building the individual, desirable societal or organizational set of valued behavior (SMEDAN, 2012; Ajonbadi, 2014; Stillman, 2003). Since education is concerned with increasing general knowledge and understanding of total environment, therefore the major burden of education falls upon our formal school system. (Galloway & Brown, 2002; Swierczek & Ha, 2003). Development as a planned process of providing employees with many experiences desired to enhance their contribution to organizational goals (Klapper, 2004; kuratkho, 2005)

TYPES OF TRAINING

Training has several definitions that are best appreciated by investigating the various objectives of the training. In this context, Moberg (2014) and Armstrong (2009) categorized the different types of training as follows:

- Technical skills training develops skills, such as manual skills and information technology (IT) skills that are needed to perform work duties, for example, during apprenticeships.
- Trainer training supports trainers in developing their skills in order to achieve training goals.
- Performance management helps workers upgrade their job performance by providing them with skills that reduce waste, improve the quality of work and so on.
- Personal training enables the person to manage his/her life and career, such as assertiveness, coaching, communication and time management.
- Problem solving/decision-making teaches individuals to solve difficulties by facing them in a systematic way.
- Management training helps managers improve their Leadership management skills by studying problems and find solutions.
- Mandatory training is determined to be essential by an organization because it is necessary to reduce organisational risks and comply with policies and government guidelines.

- Interpersonal skills support the development of leadership, coaching and communication skills, as well as interpersonal skills, such as team building, group dynamics and neurolinguistic programming.
- Business function training improves the knowledge and skills required for various business functions.
- Organisational procedures training informs and teaches employees about organisational practices, such as health and safety, performance management, equal opportunities, managing diversity policies and practices, induction programmes and so on.

EVOLUTION AND EVALUATION OF TRAINING AND DEVELOPMENT IN NIGERIA

Ogundele (2004) Pointed that the origin of serious concern for training and development in Nigeria can be dates back to April 1959 when the federal government set up the Ashby commission on the eve of independence to conduct an investigation into Nigeria needs in the field of post-school certificate and higher education over the next twenty years. The deficiencies of the Ashby was a result of lack of balance both in structure and in geographical distribution, Ashby reports recommend a broad based university education. It demands that professional qualification in accounting, personnel and banking should be obtained in the universities, Ashby made direct recommendation on management studies. Ashby also recommend that institute should make sure they make available full time commercial courses. Higher management should be taught at the postgraduate .University of Lagos was arranged for courses leading to commerce and business administration among others (Kowo, Sabitu & Adegbite, 2018).

Nigeria Management Group brought non formal employment training in 1961; the group was renamed in 1962 as Nigeria Institute of Management which was established as a nonprofit making association of professional managers. The Second National Development Plan 1970-1975 brought the establishment of key manpower training and development programs and institutions (Udo-Aka, 1987). (ITF) was established under decree no 47 of 1971 which are set up for four broad categories which are supervisory and management training; employer owned training institutions; trade group training programme and in company training programme (Ogundele,2012).Nigeria Institute of Management(NIM) services and programmes include management consultancy, executive selection, publication, annual national management conference and training, management research and offering courses to help practicing managers for concepts, techniques and method acquired(Otokiti, 2013).

According to Ajonbadi (2017) The Administrative Staff College of Nigeria (ASCON) was set up by decree no 39 of 1973 with the following functions which include establishing and maintaining library; conducting management research; providing exchange ideas among management and administrators for better understanding and promotion. Adewunmi (2004) postulated that Center for Management Development (CMD) contributed immensely in the role of managerial resources which can be categorized under promotion of entrepreneurial role; coordination of activities of private and public institutions involved in management education training and development and the action role which aim at improving the quality of management education, training and development. Osuagu (2006) Emphasized that National Institute for Policy and Strategies (NIPSS) was established under Decree No 20 of 1st January 1979 to conduct conferences, workshops and seminars for leaders in public services and private sectors with certificates awarded when necessary.

Ogundele (2012) noted that evaluation is determined whether changes in skills, knowledge and attitudes have taken place as a result of training and development. This is so because; first, there are problems that arise from the nature of behavioral sciences which are not exact, and second, there are problems that arise from the variety of factors influencing employees and managers (Sule, 2014). Ajonbadi (2014) stated that from 1960 to date there has been phenomenal increase in training and development activities. He emphasized that training and development has expanded horizontally and vertically. It is obvious that training and development have a moderating influence on organizational performance and organizational member's effectiveness. Sule (2014) postulates that result of trainers' intervention are below expectation because a large number of these trainers themselves need to be trained. Another factor affecting effectiveness in the area of training and development is the concept of reflecting the Federal character in both the public and private organizations. General indiscipline among Nigerian workforce in all sectors of the economy has been a negative factor that affects training and development in Nigeria. Supervisors and leaders in workshop lack knowledge to do the job and many have lost their sense of identification (Osuagu, 2006).

Ajonbadi (2017) highlight the factors affecting training and development in Nigeria which includes among others: Programmes were largely in the traditional management areas; The existing western management education and training programme in Nigeria is diffused; Inadequate of research grants and facilities limited the rate and size of management education and training research; The dominant use of foreign resources seemed to accept the concept of interchangeability of management education and training knowledge. Leadership problem in all organization sectors, from public, private enterprises, armed forces, political and religious organization has a negative influence on effectiveness of training and development. Most of them are leaders who say one thing and practice an entirely different thing which has contributed to high level of indiscipline in Nigeria organizations. (Otokiti, 2013; Ogundele, 2004; Melodi, 2006)

BOOSTING ENTREPRENEURIAL PERFORMANCE THROUGH ENTREPRENEURSHIP TRAINING AND DEVELOPMENT

Dawson & Henley (2012) revealed that, through training and development, entrepreneurs can be taught, or at least enhanced. This position is corroborated by Ogundele (2012) who notes that entrepreneurial ability is neither mystical nor magical but rather something that could be learned. A country with qualitative entrepreneurial education will likely produce successful entrepreneurs. The terms 'entrepreneurship education' and 'entrepreneurship training' are generally used synonymously (Lin et al, 2011; Lalkaka, 2003).It includes various programmes targeted at changing the world view of learners, from job seekers to job creators. Amongst other things, entrepreneurship training seeks to promote creativity, risk-taking, leadership, team-spirit, autonomy, sense of initiative, self-employment, self-confidence and innovation; it is a combination of all these features which set entrepreneurship education apart from general economic or business studies (Lee,Chang&Lim,2005;Matuluko,2015). Unlike ordinary business management, entrepreneurship involves elements of risk taking, creativity and innovation (Lin et al, 2011).

EFFECT OF TRAINING AND DEVELOPMENT ON ENTREPRENEURIAL STRATEGIC LEADERSHIP

Several decades of research have shown leadership as vital to Entrepreneurs. A review of the leadership literature in Africa shows descriptive but not empirically and conceptually in-depth studies of strategic leadership which is a major requirement for appreciating executive behaviors in SMEs (Lee et al, 2005). Effective training and development will enhance entrepreneurial strategic leadership while competing in turbulent and unpredictable environments. In order to succeed and survive these turbulent business environments, entrepreneurs need to adapt to these environmental changes by means of strategic leadership (Matuluko, 2015).

Armstrong (2009) noted that one of the reasons for the death of SMEs is their failure to make use of training and development for effective leadership practices. A combination of managerial leadership and visionary leadership is a factor that determines Small and Medium Enterprises' success performance. In today's competitive environment, running a small business by means of strategic leadership is not just a good idea; it is a requirement for success and sustainability (Ogundele, 2012). The inability of entrepreneurs to apply the strategic leadership skill through training and development fully in their business will consequently result in low commitment of stakeholders such as banks and other investors. (Swierrczek & Ha, 2003; Starr & Fondas, 1992; Stefanovic et al, 2009; Zahraden, 1981)

SUGGESTED SOLUTION TO THE PROBLEMS OF TRAINING AND DEVELOPMENT PROGRAMMES IN NIGERIA.

- Ogundele & Olayemi (2004) suggested that interest in research work should increase in the area of training and development, relevance and functionalism should be criteria for accepting training and development in Nigeria. Increase in research work in the area of entrepreneurial training and development will provide a unique solution to Nigeria entrepreneurial existing problems in the aspects of training and development because it will helps entrepreneurial to define their standard and purpose.
- Osuagu (2006) suggested that there should be training in vocational areas to improve functional literacy skills of talented entrepreneurs and youths which should be the responsibility of the local government by establishing trade centers, craft schools and organizing running craft.
- The Federal and State government should give both moral and adequate financial supports to research institutes and universities so as to enable them guide the citizens in molding good educational programme for development of our nation. Presently we have over 100 universities with the federal democratic government approval of new universities which form a basis for positive development for the future of Nigeria (Adewunmi, 2014).
- Research has indicated that job experience and skills are more effective than any other instrument. It is important to have appropriate training and development techniques of conferences and seminars. Training ranks lowest among the named techniques (SMEDAN, 2012).
- Research has also shown that structured and directive styles were found to be more effective of minimizing participant's conflict, increasing effective communications and achieving good cohesiveness. With this it is obvious that there is need for well-structured training programme which will encourage a favorable attitude towards trainer than a less structured trainer style (Ugoji, Mordi and Ajonbadi, 2014)
- Managers are not born but made; training and development are concerned with modifying behavior in organization. There should be ethical training and development that will have direct impact on behavior modification and societal or organizational set of valued behavior. Ethical education, training and development should be employed as instrument of innovative change in the society which will eradicate or reduce the pattern of fraud at workplace in Nigeria enterprises (Ogundele & Opeifa 2004).

METHODS AND THE SAMPLE

The case study for this research work was the Bank of Industry and Small and Medium Enterprises Development Agency of Nigeria (SMEDAN). The main objectives of the Bank of Industry is to promote industrialization and entrepreneurship development by assisting in the aspect of finance and advising

the micro, small and medium entrepreneurs(MSMEs) and large enterprises in Nigeria. Moreover SMEDAN is a government agency with the objectives of providing entrepreneurship education in the area of training and development to micro, small and medium entrepreneurs (MSMEs). The population for this study is the MSMEs of 981 respondents of Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the Bank of Industry (BOI) located in South West Nigeria. The use of primary data through the administration of structured questionnaire. Non-parametric test of Kruskal-Wallis of K-Independent sample test was used to test the independency of each hypothesis formulated because of the Ordinal and non-stringent assumptions nature of data (Creswell, 2009; Easterby-Smith et al, 2011)

RESULTS AND DISCUSSION ANALYSIS AND INTERPRETATION OF RESULT

Table 1: Moderating Influence of the Nigerian educational system on entrepreneurial performance in the area of training and development in Nigeria

Importance of Education on training and development in Nigeria	Frequency	Valid Percentage	Cumulative Percentage
SD	11	1.15	1.15
D	43	4.48	5.63
U	68	7.076	12.076
A	409	42.56	55.27
SA	430	44.72	100
TOTAL	961	100	–

Source: Field Survey (2018)
SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree.
The result shown that 409 (42.56per cent) and 430 (44.72per cent) of the respondents believed that the Nigerian educational system has influence on training and development.

Table 1 above shows that 11 respondents representing 1.15 percent and 43 respondents representing 4.48 percent strongly disagreed and disagreed respectively of the opinion that the Nigerian educational system has influence on entrepreneurial performance of MSMEs in Nigeria. It can be observed that a total number of 68 respondents were undecided as to the relevance of the Nigerian educational system to entrepreneurial performance in the area of training and development in Nigeria.

Table 2: Kruskal Wallis Test

Kruskal Wallis Test	Value	Asymptotic. Sig. (2-sided)
Chi-square	26.908	0.00351**
N of Valid Cases	961	

Source: Field Survey (2018) * 0.05 = Level of significant

Furthermore the assertion that Nigerian educational system has not been contributing towards training and development with the P-value of the Pearson chi-square gotten from 3 independent samples Kruskal Wallis test in table 2 above. The P-value = 0.00351 estimated from the test-statistic is less than 0.05 (5% level of significant) assertion that Nigerian educational system have not been contributing towards entrepreneurship development is invalid. The study shows that the Nigerian educational system has contributed positively to the area of training and development which has enhanced entrepreneurial performance in Nigeria and this is in accordance with the findings of Ogundele (2012)

Table 3: Ethical Training and Development have direct impact on behavior modification and societal or organizational set of valued behavior.

Ethical Training and Development have direct impact on behavior modification and societal or organizational set of valued behavior.	Frequency	Valid Percentage	Cumulative Percentage
SD	3	0.39	0.31
D	9	0.94	1.25
U	29	3.02	4.27
A	436	45.37	49.64
SA	484	50.36	100
Total	961	100	

Source: Field Survey (2018)
SD=Strongly Disagree, D= Disagree, U=Undecided, A=Agree, SA=Strongly Agree

Table 3 above reveals that only three respondents represent 0.31 percent of the respondents and nine respondents represent 0.94 percent of the respondents strongly disagreed and disagreed respectively unsubscribed to the opinion of introducing ethical behavior in training and development. The undecided was 3.02. However, 436 respondents (45.37 percent) and 484 respondents (50.36 percent) agreed and strongly agreed that government should introduce ethical behavior for training and development. It was shown that majority of the respondents representing 95.37 percent at least agreed that Ethical education; training and development should be employed as instrument of innovative change in the society which will eradicate or reduce the pattern of fraud in the workforce in Nigeria enterprises. This is in accordance with the findings of Ogundele&Opeifa (2004).

Table 4 Result of Chi-Square Tests from the Kruskal Wallis Test

Kruskal Wallis Test	Value	Asymptotic. Sig. (2-sided)
Chi-Square	33.678	0.0021**
N of Valid Cases	961	

Source: Field Survey (2018) * 0.05= Level of significant

The Kruskal Wallis test reveals that ethical training and development have direct impact on behavior modification and societal or organizational set of valued behavior.it was

shown that a P-value of the Pearson chi-square gotten from the independent sample of 0.0021 is less than 0.05 (5% level of significant) decision rules. This shown that the impact of ethical training and development would be more significant if the youths had earlier exposure to it from secondary and all through to their tertiary education which will eradicate corruption, nepotism and bad leadership in Nigeria.

CONCLUSION

The study has revealed that there is a moderating influence of training and development on entrepreneurial performance. The finding of this paper shows that Training organized by SMEDAN affects SMEs employment creation. Moreover, Nigerian educational system has contributed positively in training and development which has enhanced entrepreneurial performance in Nigeria and this is in accordance with the findings of Ogundele (2012). Furthermore, It was also revealed that the impact of ethical training and development would be more significant if the youths had earlier exposure to it from secondary and all through to their tertiary education which would have reduced or eliminate bad leadership and governance in Nigeria enterprises. The study concluded that base on the current requirements of the nation, with its privatization and commercialization exercises, our training and development effort should build self-reliance capabilities because this will ensure desirable behavior that will enhance the success of their organization in the fast changing environment. The study also demonstrate the need of developing global skills in Nigerian executives which will helps them to cope effectively with global competitions; these range from self-reliance, ethics or disciplined behavior, man power development and several others.it was emphasized that Nigeria entrepreneurial need skills that will enable them to adjust appropriately to global demands for effectiveness. Nevertheless, the research also concluded that job experience and skills are more effective than any other instrument.it is important to have appropriate training and development techniques of conferences and seminars and that training ranks lowest among the named techniques. Base on the result of findings of this study, the requirement noted in this paper call for disciplined behavior and ethical conduct of the entrepreneurs. Except people are disciplined and exhibit behavior, all training and development efforts will produce little or no results. Our training and development programme should focus on developing creative or innovative individuals who can help to move enterprises forward. A Self-reliant person is a creative individual. More so, Regular seminars and workshops should be organized for entrepreneurs on the importance of systematic approach of training and proper procedure to follow in identifying skills gaps.

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SCIENTIFIC PAPER

COMMODITY INDICES RISK AND RETURN ANALYSIS AGAINST LIBOR BENCHMARK

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Abstract: *This study analyze the risk and return characteristics of commodity index investments against the LIBOR benchmark. Commodity-based asset allocation strategies can be optimized by benchmarking the risk and return characteristics of commodity indices with LIBOR index rate. In this study, we have considered agriculture, energy, and precious metals commodity indices and LIBOR index to determine the risk and return characteristics using estimation techniques in terms of expected return, standard deviation, and geometric mean. We analyzed the publicly available daily market data from 10/9/2001 to 12/30/2016 for benchmarking commodity indices against LIBOR. S&P GSCI Agriculture Index (SGK), S&P GSCI Energy Index (SGJ), and S&P GSCI Precious Metals Index (SGP) are taken to represent each category of widely traded commodities in the regression analysis. Our study uses time series data based on daily prices. Alternative forecasting methodologies for time series analysis are used to cross-check the results. The forecasting techniques used are Holt-Winters Exponential Smoothing and ARIMA. This methodology predicts forecasts using smoothening parameters. The empirical research has shown that the risk of each of the commodity index that represents agriculture, energy, and precious metals sector is smaller compared to its return, whereas LIBOR based interest rate benchmark shows higher risk compared to its return in recession, non-recession and overall periods.*

Keywords: *Standard & Poor's Goldman Sachs Commodity Index, Holt-Winters Exponential Smoothing, ARIMA, LIBOR.*
(JEL Classification: *C43, G13, G15*)

INTRODUCTION

The financial market in the economy is the most important segment of an economy in terms of measuring economic growth. Investors and borrowers are participants in financial markets. Financial markets are classified into Money Markets and Capital Markets. The money market is for those investors who invest in assets for short-term and borrowers who borrow assets for short-term. Capital markets are for investors and borrowers who are large organizations or entities trading for the long term. Financial markets are driven by investors, financial institutions, banks and business entities. Economic factors or macroeconomic variables are directly or indirectly correlated with the financial market state. Any small or visible change in the economy has an impact on financial markets. Demand and supply of money in capital markets plays a significant role in determining asset prices. Investors and other market participants enter into a trade or transact based on the current market prices and how much return will the asset give in future on investment. Financial markets fundamental factors take part in decision making of asset class selection for investors. Financial market participants study and analyze various factors for their investment decisions.

A financial derivative is a contract of an underlying asset between buyer and seller with an agreed upon price at a future date. The value of an underlying asset is derived based on market conditions and other economic factors. Some examples of underlying assets are interest rates, commodities, currencies, indices, and stocks. The commodity derivatives

1 This research is part of doctoral studies at Institute of Econoics of the Polish Academy of Sciences.

market is driven by commodity producers, financial entities and investors who want to hedge their assets against future changing prices.

Futures and Options market players are usually hedgers or speculators trading in derivative contracts of underlying such as currency, interest rates, commodities, etc. Hedgers mostly enter into a contract to reduce the risk that may arise out of future price fluctuations. They use specific derivative structured products to reduce or eliminate future price risk. Let us consider a scenario for hedgers in the futures market.

Speculators are the market participants who aim to maximize their profit on investment. They are risk takers and play in futures market purely to make a profit. Speculators use technical analysis and fundamental analysis techniques to forecast future trends and make investment decisions. They also run the risk of losses if their investment turns out to be the other way.

Inflation plays a key role in the determination of market prices. Previous studies have shown that investors may gain from stock and bonds when the market predicts expected inflation. There can be other scenarios where unexpected inflation occurs, and this may result in a cause of concern for stock and equity investors.

Rise in inflation rate causes higher interest rates — operational cost increases in terms of raw materials and logistics for manufacturers and large business entities. Demand for loans in such situations goes more elevated than usual. Banks and financial institutions take advantage of increased demand for borrowings. They raise interest rates to make money out of amounts they have by lending funds on higher interest rates. The cycle of demand and supply of resources becomes responsible for the economic shift. Changes in interest rates also affect different types of investments. Stock companies make lower profits to pay high interest rates, and stock prices may fall due to rising interest rates. Bond markets prices are determined based on the number of buy and sell transactions. Increase in interest rate causes a fall in bond prices and vice versa. Commodity prices and interest rates also have shown linkages in history. Agriculture, energy and precious metals prices go up when there is a fall in interest rates and vice versa. Frankel (2012) highlighted in his studies that interest rate movement is a prime factor while forecasting commodity futures prices. He also pointed out that characteristics of commodities are important to be considered while assessing movements of interest rates in determining futures prices.

In recent times, passive investments via indices of underlying assets have shown visibility. Investors take diversification decisions by investing in indices. Change in price movements of index funds is related to market factors. Instead of investors tracking the market movements, price of indices will tell you the direction of where the market is going. There are different approaches to index investments. An investor can decide whether he wants to invest in an index that captures the entire stock market or in the index that covers sub-market-sectors, for example – stocks of the small, medium, large companies. These are some advantages of index investments. In this study, we are taking commodity indices and interest rate benchmark index to evaluate their risk and return characteristics.

Commodity indices are the benchmark to measure the performance of underlying commodity prices over a period. Each index tracks the performance of the commodity involved in that index. Most commodity indices are traded in futures markets via exchanges. The commodity indices are indirect access of commodities to investors trading in the market without entering into commodity futures markets. Indices also act as a source of information and performance benchmarks to forecast trends in cash and futures segments. Commodity indices also help investors or their fund managers in deciding asset allocation strategies. There are several economic factors such as increasing demand for commodities from developing countries (China, India, etc.), increase in interest rates, strong monetary policy, and increasing demand for energy that would impact commodity prices in future. Investors can take advantage of these factors by investing in commodities as part of their diversification approach.

Interest rate index is referred to as the benchmark rate of interest on the computation of payment schedules and amortization schedules of financial products such as mortgage or loans. Market participants or investors choose financial products based on the bank rates and banks determine the interest rate using the standard index rate. They use index rate as input to determine the interest rate of their financial products. Based on the index rate, they can estimate the future interest rate movements. Interest rate index with different maturity dates is used in different short-term and long-term financial products.

Popular interest rate indices are London Interbank Offered Rate (LIBOR), Treasuries Constant Maturities Index, and Federal Funds Reserve Rate, etc. Banks in London uses LIBOR as the interest rate at which they are willing to lend money to each other in money markets. Federal Funds Reserve rates are used by the banks that are creditworthy and lend overnight funds to each other. National Average Contract Mortgage Rate (NACR) is an index rate used in housing loans used by lenders. This rate is published monthly and very low volatile.

The primary objective of our study is to highlight return and risk characteristics of commodity index investment against risk and return of LIBOR index rate that may further help investors to get insights on their investments. Asset allocation is another aspect that investors may look at by benchmarking the risk and return characteristics of commodity indices with LIBOR. This study may further open the doors for analyzing the returns of these two financial products under different economic conditions.

In this study, we have considered agriculture, energy, and precious metals commodity indices and LIBOR index to determine the return characteristics and compare their returns using estimation techniques in terms of expected return, standard deviation, and geometric mean. To give the study more accuracy, alternative forecasting methodologies for time series analysis are used. The forecasting techniques used are Holt-Winters Exponential Smoothing and ARIMA. The methodology predicts forecasts using smoothening parameters as discussed in the Methodology section.

LITERATURE REVIEW

Scherr and Madsen (1983) conducted an observational study on determining the relationship between real interest rates and agricultural commodity prices. They highlighted that the higher interest rates in 1978 showed some behavior in determining agricultural commodity prices. Their observations were based on unusual higher rates of interest, lower rates at the time of inflation and reducing rates for domestic consumption. They also covered the impact of agriculture commodity prices in near-by future.

Gruber and Vigfusson (2018) examined the effect of interest rates in the volatile market and its relationship with commodity prices. Their study observed that lower interest rates would make the commodity market less volatile and would lead to higher commodity prices assuming shocks are persistent. They showed an inverse relationship between the interest rate and correlation for metal prices. Their research suggested distinguishing financial implications and fundamental factor while measuring commodity price correlation.

Reicher and Utlaut (2010) conducted studies on determining the relationship between oil prices and nominal interest rates using VAR analysis. They discovered a strong positive correlation between oil prices and long-run interest rates, stability in interest rates and short-run oil prices, no correlation between oil prices and productivity and no change in correlation between oil prices and unemployment. The study concluded that the country's monetary policy is a major factor impacting oil prices in the long run.

Nordin et al. (2014) examined the impact of palm oil, oil prices and gold prices, interest rate and exchange rate on the performance of Malaysian stock market returns. He had taken the bounds test approach and the results of the study showed the strong impact of palm oil prices, interest rate and exchange rate on the stock market index returns, no impact of gold prices and oil prices on stock market index returns. He conducted co-integration analysis taking multiple variables identifying the impact on Malaysian stock market index returns.

Sari and Soytas (2006) investigated the relationship between oil price changes and macroeconomic variables such as stock returns and interest rates. The study results indicated that oil prices were unaffected the stock returns in Turkey. There was no significant evidence that showed a direct relationship between macroeconomic variables and changes in oil prices.

Akram (2009) conducted a study to analyze the factors such as exchange rate and real interest rates affecting commodity price fluctuations. The analysis was conducted using a structural VAR model. The study results found that there was a significant increase in commodity prices in response to a decrease in real interest rates. Changes in interest rates showed movements in oil prices and raw material prices. The same was depicted with the exchange rate. Weaker dollar rate leads to an increase in commodity prices. Both variables interest rate and exchange rate found substantial in commodity price fluctuations.

Schnabel (2010) performed a study to examine linkages between changes in interest rates and commodity spot prices. He used the cost-of-carry model taking the commodity spot and futures prices to measure the effect of changes in interest rates. The results indicated that an increase in interest rate would decrease the spot price. This result was found under mean-reverting expectations. Under the test of invariant expectation, no linkage found between interest rate change and the spot prices. Momentum expectation test showed causality between interest rates and spot prices. Under this test, it was found that an increase in the interest rates caused a rise in spot prices and vice versa.

Kohlscheen et al. (2016) analyzed the relationship between exchange rates and commodity prices. He performed various statistic tests in predictive analysis and found that commodity prices and exchange rates were highly correlated economically and statistically. The commodity price-exchange rate linkage remained unaffected under changes in uncertainty and global risks. The study provided a base to further research on finding to what extent the economic factors are responsible for commodity price developments.

Günay (2015) examined the correlation between liquidity with the overnight (ON) LIBOR rates and stock market price movements. He had taken the scenario of the mortgage crisis of 2008 and considered the countries such as Portugal, Italy, Ireland, Greece, Spain, and Turkey. The empirical analysis was conducted using Fully Modified OLS, Canonical Co-integrating Regression, and Dynamics Least Squares tests. These tests determined the direction of the relationship between stock market price movements and LIBOR rate movements. The increase in ON LIBOR rates indicated a decrease in Turkish and Spanish market liquidity.

Tafa (2015) explained how exchange rate fluctuations impact on interest rate movements. He conducted empirical analysis using regressions to examine the relationship among exchange rate and interests in Albania. The test results showed an increase in interest rates influenced exchange rates positively. Apart from interest rates, other variables such as income level, inflation, government policies and speculation on FX rates also affected exchange rate fluctuations.

Foerster and Sapp (2003) addressed Canadian stock prices and interest rates in his research and performed analysis to find a correlation between prevailing interest rates and stock prices. He found results were different in expansion and recession time periods. He also found that interest rate was highly negatively correlated with returns in industries such as infrastructure and less negatively correlated with returns for consumer product industries. In addition to that, the results also showed positive linkages between returns of resource-based industries and interest rate change. Various observations were found in this regression analysis.

Covrig et al. (2004) conducted studies on TIBOR/LIBOR and the determinants of the 'Japan Premium'. The study indicated that the changing TIBOR-LIBOR spread affects credit risk associated with Japan premium. The spread is a model parameter of this study. Interest rate and stock price effects have an influence on the variance of spread.

Moss and Moss (2010) examined the relationship between bank common stock index price and the interest rate on

Treasury securities. He also analyzed the correlation between interest rate term structure and bank stock prices. Multiple linear regressions were used to examine variables affecting bank stock prices. The results stated that bank stock prices were affected by changes in interest rates. He mentioned that this study would be helpful for decision making of including bank stocks in investors and bank managers portfolio.

Braml (2016) conducted studies to investigate the integrity of LIBOR as trillions of US dollar products are associated with it. The studies took interest rate parity approach to find out the behavior of LIBOR at the macro and micro level. The macro level analysis showed significant deviation in LIBOR compared to other short-term interest rates. Micro-level analysis indicated there were significant effects on the LIBOR fixing process due to potential manipulation of rates. Irregular behavior was detected if there were manipulation of LIBOR in the rate-setting process.

All the studies above are conducted on various factors affecting commodity prices or implications of interest rates on exchange rates, or the relationship between interest rates and stock exchange prices, etc. Either commodity prices are compared with exchange rates or inflation rates or interest rate movements are compared with exchange rate fluctuations. None of the studies have highlighted the comparison between commodity sub-indices with standard benchmark interest rate index, LIBOR.

The objective of this study to compare commodity indices returns by benchmarking each index against the LIBOR rate. Agriculture, energy and precious metals – three indices have been considered for this analysis. LIBOR as standard interest rate index has been taken for benchmarking. This study can provide insights to commodity producers, manufacturers, investors, and financial institutions by evaluating returns characteristics of commodity indices.

METHODOLOGY

To determine risk and return characteristics of commodity index vs. LIBOR, three statistical values are calculated namely, Expected Return (ER), Standard Deviation and Geometric Mean (multiplicative mean). The calculated values will help in identifying which investment is better in terms of higher returns with minimum risk. We have used Moving Averages (MA) time series methodology to estimate the future trend of indices. We have followed the steps below to estimate the simple forecasting model of expected return, standard deviation and geometric mean for each index.

1. Consider the dataset of each index
2. Normalize the data
3. Perform exploratory analysis (plot the chart and decompose to see trend, seasonality and error component of each index)
4. Calculate ER, Standard Deviation and Geometric Mean of each index
   a. Simple Average
   b. Holt-Winters Exponential Smoothing
   c. ARIMA
5. Benchmark each commodity index against LIBOR
6. Analyze the results

Before we proceed to perform analysis, let us understand the formula of each metric used in the comparison of each index.

EXPECTED RETURN

The expected return of an Index is the weighted average of the expected annualized returns. The formula is –

$$E(R_I) = \sum_{j=1}^{m} W_j E(R_j) \quad (1)$$

$E(R_I)$ is expected return of an Index, j is the number of observations, W_j is the weighted average of daily returns that are $E(R_j)$.

Standard Deviation

The standard deviation of an Index is an annualized risk of the index in percentage unit. The formula is –

$$S_I = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \bar{x})^2} \quad (2)$$

S_I is the standard deviation of Index, N is the number of observations, i is the value of each observation, x_i is x variable values and x_i is the sample mean.

Geometric Mean

The geometric mean is another criterion to calculate return using multiplicity approach. The formula is –

$$\left(\prod_{i-1}^{N} x_i\right)^{\frac{I}{N}} = \sqrt[n]{a_1, a_2, \ldots . a_n} \quad (3)$$

The equation states the n^{th} root of the product of the number of observations. This metric is generally used for estimating future growth rates or interest rates based on historical data.

To gain more clarity in the analysis, we have used another time series forecasting method called Holt-Winters multiplicative method. In this method, we have taken 3 smoothing parameters α, β*, and γ. This time series forecasting method is used to calculate the expected trend of returns and risk parameters. The return is shown as a point estimate and error terms (risk) are shown as Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE), and Mean Absolute Squared Error (MASE). Autoregressive Integrated Moving Average (ARIMA) is another method that is used to compute the future prices of these indices. This method is used for short-term forecasting of time series data available.

Let us look at the formula for each error term described above.

$$MAE = (|e_i|) \quad (4)$$

Where, e_i is forecast error which equals to $y_i - \hat{y}_i$. y_i is i^{th} observation and $\hat{y}_i$ is a forecast of y_i.

$$MAPE=(|p_i|) \quad (5)$$

Where p_i is equals to $100e_i/y_i$

$$MASE=(|q_j|) \quad (6)$$

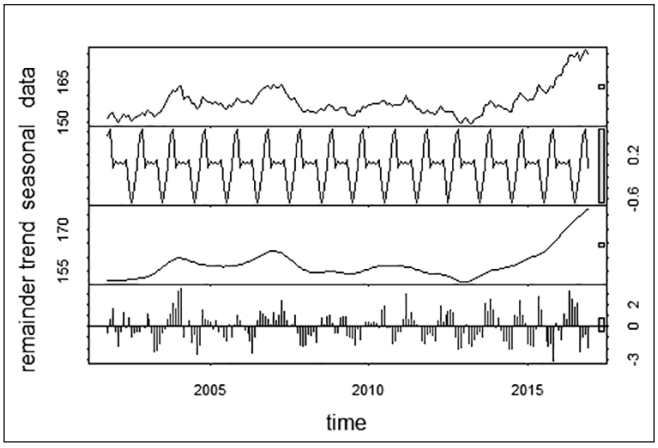
Where q_j is independent of scaled error.

$$q_j = \frac{e_j}{\frac{1}{N}\sum_{i=1}^{N}|y_i - \hat{y}_i|}$$

S&P GSCI Agriculture Index (SGK) Vs Overnight London Interbank Offered Rate (LIBOR), based on U.S Dollar

A daily closing price of SGK is considered from 10/9/2001 to 12/30/2016. To measure prices against LIBOR prices, the metric is converted to the comparable unit. The log function is used to normalize the prices of SGK and LIBOR. Here, the assumption is that the prices of these 2 indices are distributed log-normally. This would help predict better results in terms of forecasting. The next step is to perform exploratory analysis by decomposing the dataset of SGK and LIBOR.

Agriculture Index (SGK)



LIBOR

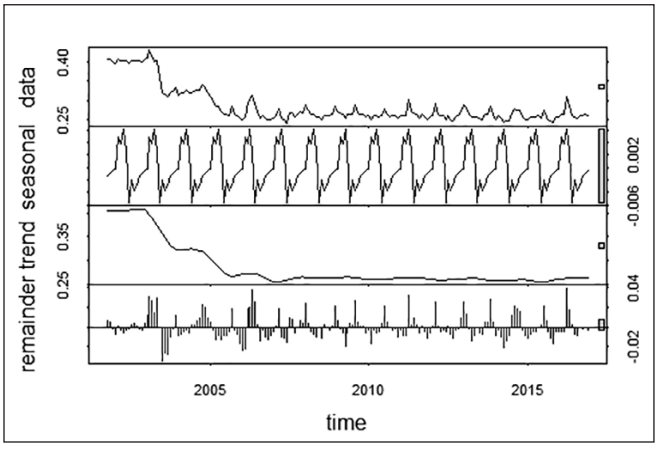


Figure 1: Trend of Agriculture Index (SGK) and LIBOR

Decomposed data clearly indicates an increasing trend for Agriculture Index (SGK) whereas LIBOR indicates a decreasing trend over a period. To analyze further, computation of metrics is used to measure future returns Table 1. shows calculated log values of SGK and LIBOR.

Table 1. Summary Statistics Agriculture Index and LIBOR

Metric	SGK	LIBOR
Expected Return	2%	-4%
Standard Deviation (Risk)	9%	36%
Geometric Mean	1%	-10%
Number of Observations	3727	3727

The results indicate that the Agriculture Index (SGK) provides 2% returns with an annual risk of 9% whereas LIBOR provides negative returns of -4% with an annualized risk of 36%. To get more clarity, we use the multiplicative model to determine return in terms of the geometric mean. SGK provides 1% annual return whereas LIBOR indicates -10% returns. This result also forecasts SGK investment is better than LIBOR return.

Expected Return, Standard Deviation, Geometric Mean (SGK vs. LIBOR) - Recession Period

We have considered the recession period as one of the macroeconomic variables to observe the risk and return characteristics of SGK and LIBOR. Our extended analysis considering the recession parameter provides support to our findings. Daily time series recession data from 2001 to 2009 is undertaken to compute the expected return, standard deviation and the geometric mean of the two indices. Table 2. shows the calculated risk and return values of SGK and LIBOR.

Table 2. Summary Statistics Agriculture Index and LIBOR (R)

Metric Recession Data	SGK (R)	LIBOR (R)
Expected Return	-1%	-80%
Standard Deviation (Risk)	15%	94%
Geometric Mean	-2%	-125%
Number of Observations	384	384

The results indicate that the Agriculture Index (SGK) provides negative -1% returns with an annual risk of 15% whereas LIBOR provides negative returns of -80% with an annualized risk of 94%. To get more clarity, we use the multiplicative model to determine returns in terms of the geometric mean. SGK provides -2% annual returns whereas LIBOR indicates -125% returns. The ratio of risk and return characteristics of these two shows a significant difference.

During the recession period, there were time series data points not showing recession parameter. The analysis

is conducted on this non-recession period also. We have ascertained the risk and return parameters have shown similar results in comparing risk and return characteristics of commodity indices vs. LIBOR.

Daily time series recession data from 2001 to 2009 for non-recession (NR) period is taken to extend this study. Table 3. shows calculated return values of SGK and LIBOR for the data points that didn't show recession parameters.

Table 3. Summary Statistics Agriculture Index and LIBOR (NR)

Metric Recession Data	SGK (NR)	LIBOR (NR)
Expected Return	22.10%	-73%
Standard Deviation (Risk)	20%	104%
Geometric Mean	20.33%	1%
Number of Observations	413	413

The results indicate that the Agriculture Index (SGK) provides 22.10% return with an annual risk of 20% whereas LIBOR provides a negative return of -73% with an annualized risk of 104%. To get more clarity, we use the multiplicative model to determine return in terms of the geometric mean. SGK provides 20.33% annual return whereas LIBOR indicates 1% return. This result also forecasts SGK investment is better than LIBOR returns.

The next section provides another method of forecasting risk and returns in terms of Weighted Average methodology founded by Holt, Winters, and Brown.

Holt-Winters Multiplicative Method (SGK vs. LIBOR)

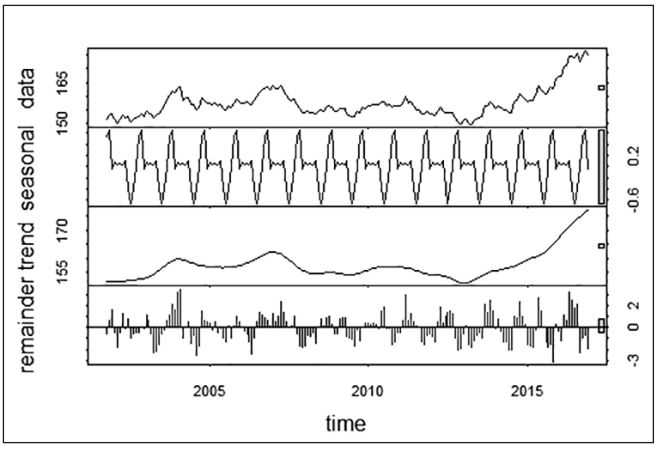
Holt-Winters forecasting model is used to see a future trend in terms of expected return and risk. SGK and LIBOR time series data is used as input parameters along with □, □□ and □ smoothing parameters. The results parameters examined are point forecast for expected return and MAE, MAPE and MASE for risk characteristics of investments.Table 4. shows calculated output parameters for SGK and LIBOR.

Table 4. Holt-Winter Model Summary Statistics (SGK vs. LIBOR)

Metric	SGK	LIBOR
Expected Return (Point Estimate)	2.63%	0.25%
MAE (Risk Parameter)	0.002%	0.01%
MAPE (Risk Parameter)	0.10%	3.92%
MASE (Risk Parameter)	0.31%	0.52%
Number of Observations	3727	3727

The results state that SGK return shows a 2.63% increase with 0.10% annualized risk and LIBOR returns shows 0.25% with 3.92% annualized risk. The forecast result in the plot diagram clearly shows increased return for SGK and LIBOR.

Agriculture Index (SGK) Returns



LIBOR Returns

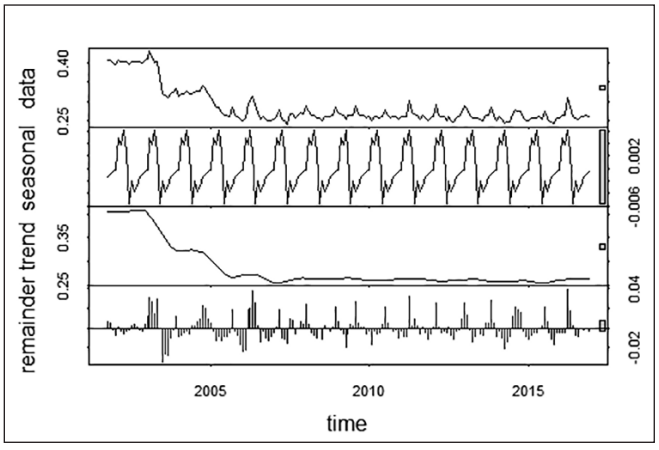


Figure 2: Returns of Agriculture Index (SGK) and LIBOR

Another forecasting method, Autoregressive Integrated Moving Averages (ARIMA) is used to evaluate the returns offered by SGK and LIBOR.

SGK and LIBOR time series data is used as an input with p, d, q as smoothening parameters. ARIMA (0,1,0) is used for SGK and ARIMA (1,1,1) is used for LIBOR. The results parameters examined are point forecast for expected returns and MAE, MAPE and MASE for risk characteristics of investments. Table 5. shows calculated output parameters for SGK and LIBOR.

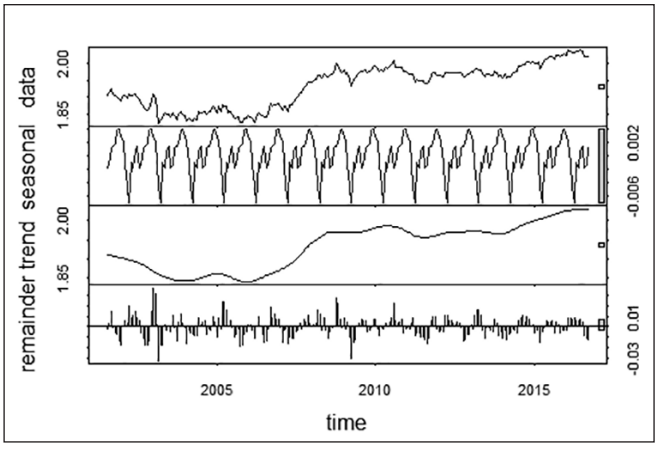
Table 5. ARIMA Summary Statistics (SGK vs. LIBOR)

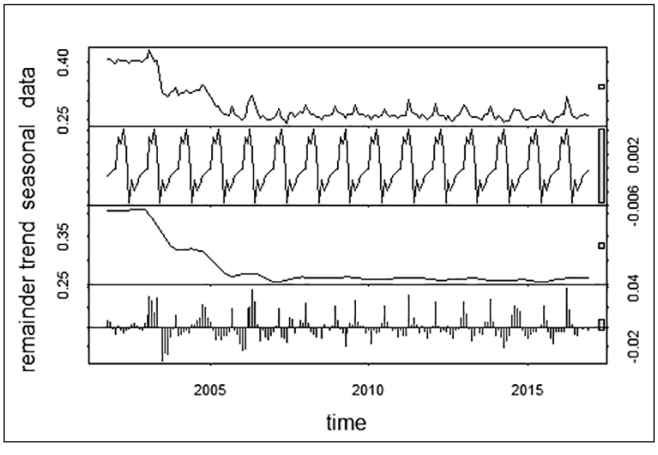
Metric	SGK (ARIMA)	LIBOR (ARIMA)
Expected Return (Point Estimate)	2.24%	0.25%
MAE (Risk Parameter)	0.002%	0.008%
MAPE (Risk Parameter)	0.12%	3.13%
MASE (Risk Parameter)	0.26%	0.41
Number of Observations	3727	3727

The results state that SGK return shows a 2.24% increase with 0.12% annualized risk and LIBOR returns shows 0.25% with 3.13% annualized risk. The forecast results are close to the results provided by the Holt-Winters methodology.

S&P GSCI Energy Index (SGJ) Vs Overnight London Interbank Offered Rate (LIBOR), based on U.S Dollar

A daily closing price of SGJ is considered from 10/9/2001 to 12/30/2016. To measure prices against LIBOR prices, the metric is converted to the comparable unit. The log function is used to normalize the prices of SGP and LIBOR. Here, the assumption is that the prices of these 2 indices are distributed log-normally. This would help predict better results in terms of forecasting. The next step is to perform exploratory analysis by decomposing the dataset of SGJ and LIBOR.





Energy Index (SGJ)

LIBOR

Figure 3: Trend of Energy Index (SGJ) and LIBOR

Decomposed data clearly indicates an increasing trend for Energy Index (SGJ) whereas LIBOR indicates a decreasing trend over a period. To analyze further, computation of metrics is used to measure future returns. Table 6. shows calculated log values of SGJ and LIBOR.

Table 6. Summary Statistics Energy Index and LIBOR

Metric	SGJ	LIBOR
Expected Return	2%	-4%
Standard Deviation (Risk)	14%	36%
Geometric Mean	1%	-10%
Number of Observations	3728	3728

The results indicate that Energy Index (SGJ) provides 2% returns with an annual risk of 14% whereas LIBOR provides negative returns of -4% with an annualized risk of 36%. To get more clarity, we use the multiplicative model to determine returns in terms of the geometric mean. SGJ provides 1% annual return whereas LIBOR indicates -10% returns.

Expected Return, Standard Deviation, Geometric Mean (SGJ vs. LIBOR) - Recession Period

For the SGJ Index and LIBOR Index, we have extended the analysis considering the recession parameter provides support to our findings. Daily time series recession data from 2001 to 2009 is undertaken to compute the expected return, standard deviation and the geometric mean of the two indices.

Table 7. Summary Statistics Energy Index and LIBOR (R)

Metric Recession Data	SGJ (R)	LIBOR (R)
Expected Return	-10%	-80%
Standard Deviation (Risk)	21%	94%
Geometric Mean	-12%	-125%
Number of Observations	384	384

The results indicate that Energy Index (SGJ) provides negative -10% returns with an annual risk of 15% whereas LIBOR provides negative returns of 21% with an annualized risk of 94%. To get more clarity, we use the multiplicative model to determine returns in terms of the geometric mean. SGJ provides -12% annual returns whereas LIBOR indicates -125% returns. The ratio of risk and return characteristics of these two shows a significant difference.

We have further computed returns characteristics of these indices during non-recession (NR) period.

Daily time series non-recession data from 2001 to 2009 is undertaken to compute the expected return, standard deviation and the geometric mean of the two indices.

Table 8. Summary Statistics Energy Index and LIBOR (NR)

Metric Recession Data	SGJ (NR)	LIBOR (NR)
Expected Return	33.15%	-73%
Standard Deviation (Risk)	39%	104%
Geometric Mean	26.91%	1%
Number of Observations	412	412

The results indicate that Energy Index (SGJ) provides negative 33.15% returns with an annual risk of 39% whereas LIBOR provides negative returns of -73% with an annualized risk of 104%. To get more clarity, we use the multiplicative model to determine returns in terms of the geometric mean. SGJ provides 26.91% annual return whereas LIBOR indicates 1% return.

Holt-Winters Multiplicative Method (SGJ vs. LIBOR)

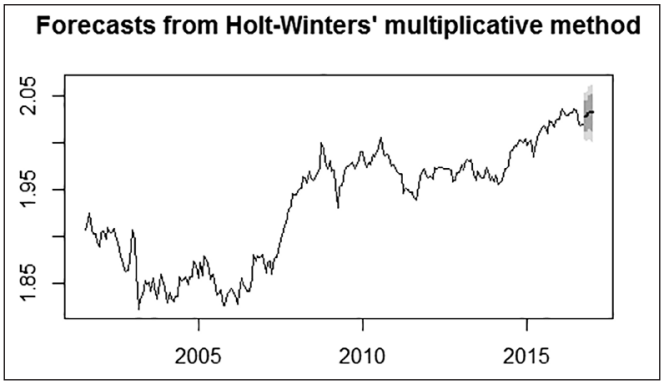
SGJ and LIBOR time series data is used as input parameters along with α, β∗ and γ smoothing parameters. The results parameters examined are point forecast for expected returns and MAE, MAPE and MASE for risk characteristics of investments Table 9. shows calculated output parameters for SGJ and LIBOR.

Table 9. Holt-Winter Model Summary Statistics (SGJ vs. LIBOR)

Metric	SGJ	LIBOR
Expected Return (Point Estimate)	2.29%	0.25%
MAE (Risk Parameter)	0.004%	0.01%
MAPE (Risk Parameter)	0.19%	3.92%
MASE (Risk Parameter)	0.28%	0.52%
Number of Observations	3728	3728

The results state that SGJ return shows a 2.29% increase with 0.19% annualized risk and LIBOR return shows 0.25% with 3.92% annualized risk. The forecast result in the plot diagram clearly shows increased return for SGJ and LIBOR.

Energy Index (SGJ) Returns



LIBOR Returns

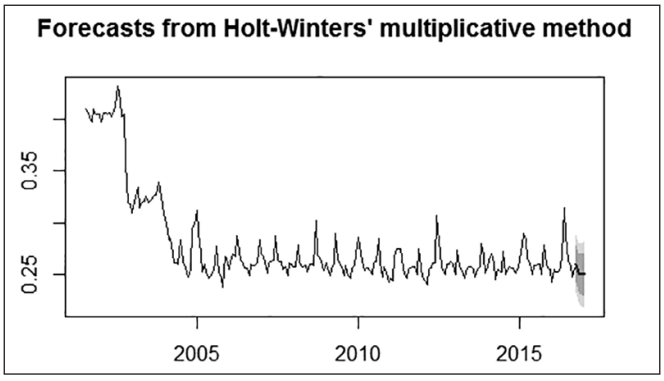


Figure 4: Returns of Energy Index (SGJ) and LIBOR

Autoregressive Integrated Moving Averages (ARIMA) is also used to evaluate the returns offered by SGJ and LIBOR.

SGJ and LIBOR time series data is used as an input with p, d, q as smoothening parameters. ARIMA (0,1,0) is used for SGK and ARIMA (1,1,1) is used for LIBOR. The results parameters examined are point forecast for expected returns and MAE, MAPE and MASE for risk characteristics of investments.Table 10. shows calculated output parameters for SGJ and LIBOR.

Table 10. ARIMA Summary Statistics (SGJ vs. LIBOR)

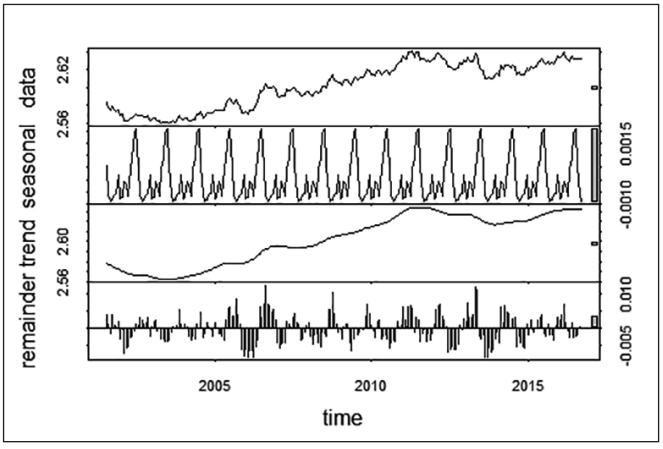
Metric	SGJ (ARIMA)	LIBOR (ARIMA)
Expected Return (Point Estimate)	2.62%	0.25%
MAE (Risk Parameter)	0.01%	0.008%
MAPE (Risk Parameter)	0.43%	3.13%
MASE (Risk Parameter)	0.16%	0.41%
Number of Observations	3727	3727

The results state that SGK return show 2.62% increase with 0.01% annualized risk and LIBOR returns shows 0.25% with 3.13% annualized risk. The forecast results are close to the results provided by Holt-Winters methodology.

S&P GSCI Precious Metals Index Vs Overnight London Interbank Offered Rate (LIBOR), based on U.S Dollar

A daily closing price of SGP is considered from 10/9/2001 to 12/30/2016. To measure prices against LIBOR prices, the metric is converted to the comparable unit. The log function is used to normalize the prices of SGP and LIBOR. Here, the assumption is that the prices of these 2 indices are distributed log-normally. The next step is to perform exploratory analysis by decomposing the dataset of SGP and LIBOR.

Precious Metals Index (SGP)



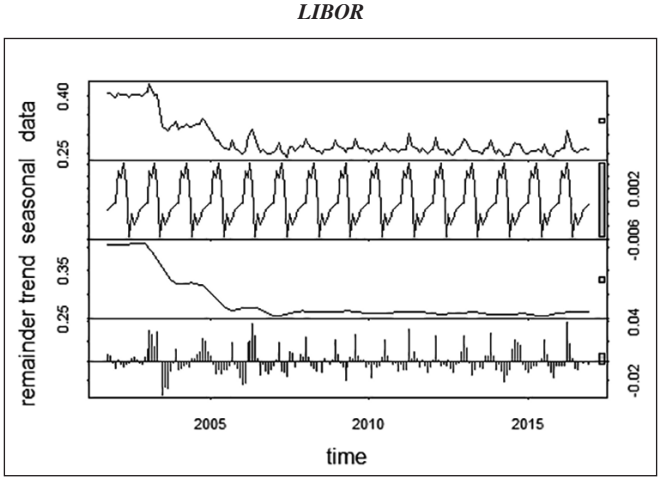


Figure 5: Trend of Precious Metals Index (SGP) and LIBOR

Decomposed data clearly indicates an increasing trend for Precious Metals Index (SGP) whereas LIBOR indicates a decreasing trend over a period. To analyze further, computation of metrics is used to measure future returns. Table 11. shows calculated log values of SGP and LIBOR.

Table 11. Summary Statistics Precious Metals Index and LIBOR

Metric	SGP	LIBOR
Expected Return	4%	-4%
Standard Deviation (Risk)	9%	36%
Geometric Mean	4%	-10%
Number of Observations	3727	3727

The results indicate that the Precious Metals Index (SGP) provides 4% return with an annual risk of 9% whereas LIBOR provides negative return of -4% with an annualized risk of 36%. To get more clarity, we use the multiplicative model to determine return in terms of the geometric mean. SGP provides 4% annual return whereas LIBOR indicates -10% return.

Expected Return, Standard Deviation, Geometric Mean (SGP vs. LIBOR) - Recession Period

For SGP Index and LIBOR Index, we have extended the analysis considering the recession parameter provides support to our findings. Daily time series recession data from 2001 to 2009 is undertaken to compute the expected return, standard deviation and the geometric mean of the two indices.

Metric Recession Data	SGP (R)	LIBOR (R)
Expected Return	5%	-80%
Standard Deviation (Risk)	13%	94%
Geometric Mean	4%	-125%
Number of Observations	384	384

Table 12. Summary Statistics Precious Metals Index and LIBOR (R)

The results indicate that the Precious Metals Index (SGP) provides 5% returns with an annual risk of 13% whereas LIBOR provides negative returns of -80% with an annualized risk of 94%. To get more clarity, we use the multiplicative model to determine returns in terms of the geometric mean. SGP provides 4% annual return whereas LIBOR indicates -125% returns. The ratio of risk and return characteristics of these two shows a significant difference.

We have further computed returns characteristics of these indices during non-recession (NR) period. Daily time series non-recession data from 2001 to 2009 is undertaken to compute the expected return, standard deviation and the geometric mean of the two indices.

Table 13. Summary Statistics Precious Metals Index and LIBOR (NR)

Metric Recession Data	SGP (NR)	LIBOR (NR)
Expected Return	36.46%	-73%
Standard Deviation (Risk)	30%	104%
Geometric Mean	32.70%	1%
Number of Observations	412	412

The results indicate that Precious Metals Index (SGP) provides negative 36.46% returns with an annual risk of 30% whereas LIBOR provides negative returns of -73% with an annualized risk of 104%. To get more clarity, we use the multiplicative model to determine returns in terms of the geometric mean. SGP provides 32.70% annual return whereas LIBOR indicates 1% returns.

Holt-Winters Multiplicative Method (SGP vs. LIBOR)

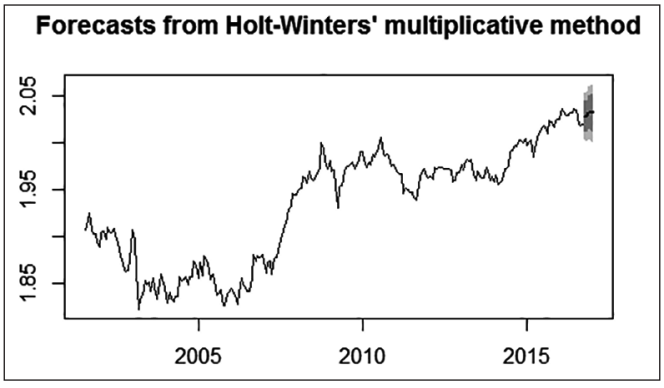
SGP and LIBOR time series data is used as input parameters along with □, □□ and □ smoothing parameters. The results parameters examined are point forecast for expected returns and MAE, MAPE and MASE for risk characteristics of investments. Table 14. shows calculated output parameters for SGP and LIBOR.

Table 14. Holt-Winter Model Summary Statistics (SGP vs. LIBOR)

Metric	SGP	LIBOR
Expected Return (Point Estimate)	2.63%	0.25%
MAE (Risk Parameter)	0.002%	0.01%
MAPE (Risk Parameter)	0.10%	3.92%
MASE (Risk Parameter)	0.31%	0.52%
Number of Observations	3727	3727

The results state that SGP return shows a 2.63% increase with 0.10% annualized risk and LIBOR returns shows 0.25% with 3.92% annualized risk. The forecast result in the plot diagram clearly shows increased returns for SGP and LIBOR.

Precious Metals Index (SGP) Returns



LIBOR Returns

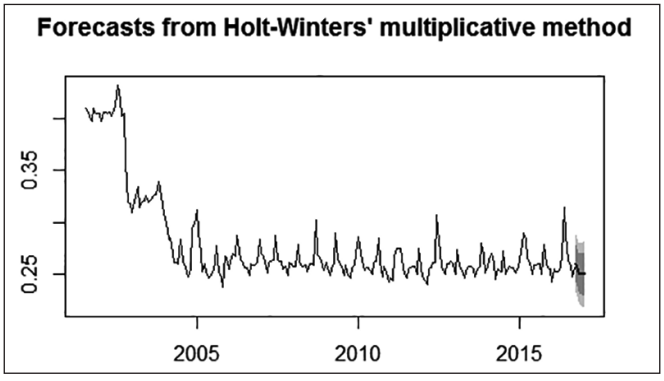


Figure 6: Returns of Precious Metals Index (SGP) and LIBOR

Autoregressive Integrated Moving Averages (ARIMA) is also used to evaluate the returns offered by SGP and LIBOR.

SGP and LIBOR time series data is used as an input with p, d, q as smoothening parameters. ARIMA (0,1,0) is used for SGP and ARIMA (1,1,1) is used for LIBOR. The results parameters examined are point forecast for expected returns and MAE, MAPE and MASE for risk characteristics of investments. Table 15. shows calculated output parameters for SGP and LIBOR.

Table 15. ARIMA Summary Statistics (SGP vs. LIBOR)

Metric	SGP (ARIMA)	LIBOR (ARIMA)
Expected Return (Point Estimate)	2.63%	0.25%
MAE (Risk Parameter)	0.002%	0.008%
MAPE (Risk Parameter)	0.09%	3.13%
MASE (Risk Parameter)	0.30%	0.41%
Number of Observations	3727	3727

The results state that SGP return shows a 2.63% increase with 0.002% annualized risk and LIBOR returns shows 0.25% with 3.13% annualized risk. The forecast results are close to the results provided by the Holt-Winters methodology.

RESULT ANALYSIS

From the above analysis and forecasting, an annualized return of all the above commodity indices offers higher expected returns compared to LIBOR expected returns. All the three commodity indices are the best bet compared to the annualized LIBOR return of -4% and 36% annual risk.

Analysis using Recession parameters also have shown similar results in forecasting returns of commodity indices and LIBOR. The results indicated that the annualized return of commodity indices is higher than LIBOR return of -80% with 94% annual risk.

Holt-Winter Multiplicative forecasting method also has shown the similar results of the annualized return of commodity indices being higher than LIBOR returns. Looking at risk and return characteristics of commodity indices, hedgers and speculators can consider commodity index investment in their portfolio. LIBOR, on the other hand, shows small returns with higher risk compared to commodity indices.

CONCLUSIONS

Most of the previous studies analyzed the correlation between LIBOR and treasury rates, determining linkages between commodity markets and stock markets, or investigating the relationship of macroeconomic variables with asset classes. No study has compared risk and return parameters of commodity indices vs. LIBOR. We have conducted comparison studies with a focus on commodity futures indices and LIBOR.

In this study, we analyzed risk and return characteristics of indices of two asset classes, commodities, and interest rates. The analysis result indicates that the commodity index investment provides better return compared to LIBOR return. LIBOR has shown higher risk and low returns compared to commodity indices.

LIBOR interest rates data taken for our analysis may have a potential bias connected with the manipulation of interbank lending rates by various financial institutions, known as the LIBOR scandal.

Our study witnessed that there is risk associated with both, commodity indices and LIBOR. Comparison study highlights the risk of commodity index is smaller compared to its return whereas LIBOR shows higher risk compared to its return in recession, non-recession and overall periods. Further research can be carried out by analyzing the risk and return characteristics of various single commodity indices like carbon index or lead index against LIBOR or other interest rate benchmarks.

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SCIENTIFIC PAPER

ECONOMIC PERFORMANCES OF GERMAN AGRI-FOOD BUSINESSES: AN EXTENSION OF EXISTING DISCOURSES ON THE TOPIC

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Abstract: *Considering the circumstance that literature dealing with the economic performance of agri-food businesses in general, or particularly with the German agricultural sector, mainly deals with strictly agricultural-related theory in order to explain the economic success of agri-food businesses, the present paper aims to extend existing discourses to further areas of thought. Consequently, the characteristics: a) increased size of agribusiness, b) pull-strategies, c) the development of new markets and d) focus on the processing industry, that all correspond to the current picture of the German agricultural sector and are considered to be significantly responsible for recently managing to outpace the French agri-food sector, will be first explained in their success against the background of mainly non-agricultural-related literature. By doing so helpful and rather unnoted perspectives can be contributed to existing discourses. Second, the paper presents scatter plots which portray correlations between a) the added value of agriculture and the regular labor force, b) the added value of agriculture and the number of agricultural holdings and c) the added value of agriculture and the number of enterprises concerning milk consumption. Corresponding scatter plots which show different developments in Germany and France can be related to the findings of the first part of the paper and allow new perspectives in existing discourses as well.*

Keywords: *German Agribusiness, Profit, Theoretical Classification, Extending Discourses, Eu, Agriculture.*
(JEL Classification: *Q10*)

INTRODUCTION

Considering the fact that the EU encompasses 500 million consumers who want to be provided with both high quality but also affordable food and 66 million people working in the agricultural domain (European Commission, 2016: 4, 8), it only seems reasonable that agricultural policy appears to be a highly discussed and controversial topic in modern politics and science. Due to the value of agricultural production, from the perspective of consumption as well as employment, the high quantity of scientific contributions regarding questions of how to improve agricultural processes, from a procedural and not least economical perspective, does not appear to be surprising (among others: Reidsma et al. 2010; Oliver et al. 2010; Ponti et al. 2012).

Unlike rather general contributions which scientifically foster improvements in the agricultural sector of the EU in general, the strong performance of German agri-food businesses in particular motivated researchers to concretely analyze the case of German agriculture (among others: Mathijs and Swinnen 2001; Schmidtner, 2013; Damave, 2017). Having doubled its exports in 2013 to 65 billion Euro in only one decade (Saltz and Mailliet 2014), Germany managed to outpace France, which was considered the leading agricultural producer in the EU as it lists not only 16% of the agricultural land of the EU but also 18% of the total value of the EU-agricultural production (Damave, 2017: 3). Considering the latest shifts in the considerations of agricultural enterprises, which are based on the growing success of German agri-food businesses, the comparison between economic strategies being pursued by German and French agri-food businesses seems to be a promising project and is increasingly being conducted in

context of academic works. Interestingly enough, the strong developments in the German agri-food sector are leading to shifts in the economic conditions of the European agricultural business. Whereas France, due to its economic orientation in the agricultural business, maintains economic strategies and practices over time, it is a promising project to compare opposing measures of German farms with French ones, which have brought great success in the past. Whereas, however, comparisons- but also Germany specific papers on the topic often remain on a rather agricultural-specific level by analyzing the economic success of German agriculture, the present paper aims to raise and generate rather general economic perspectives on the topic in order to extend existing discourses to further areas of thought. In the process of delivering new perspectives to existing discourses on the success of German agri-food businesses, the paper covers two focal points:

1. Willing to extend its perspective on the success of German agriculture the major point of the paper is to explain the success of German agri-food businesses not only by consulting agricultural-based literature and to relate concrete German procedures to it, but primarily through setting corresponding actions in connection to other areas of economical literature[1]. By doing so, pertinent and repeating patterns of economical thought and strategies, which pursue the aim of promoting economic performances and effectiveness, are being distilled from corresponding literature and are set in connection with concrete German agri-economical measurements which tend to differ from the French model[2]. By means of this approach, the concrete economical measurements being conducted by German agri-food businesses in order to improve their economic performance will be made transparent against the background of differently rooted economic literature. Knowing about a selection of general economical concepts that Germany is adopting in its processes, shall lead to the awareness of a set of abstract economical approaches that at first glance might not have been set in context with agricultural business. As a result, the perspectives delivered can extend existing discourses[3].
2. Secondly the paper presents a set of scatter plots which on an exemplarily basis compare the German and the French agricultural sector. By moving away from a rather process-oriented approach of theorizing and considering concrete German agricultural-actions, observing the result of general German agricultural-actions by comparing its influence on the net output of agriculture sector, can a) steer the comparison between German and French agriculture in new spheres of thought and therefore b) stimulate the corresponding discourse positively.

By delivering, thus, a theorization of German agricultural strategies and selected scatter plots the present paper provides information and thematic insights that can broaden existing discourses on the topic.

LITERATURE OVERVIEW

Despite the heterogeneity of economical literature in which economic improvement strategies for economical actors of different sizes and domains are suggested, corresponding literature reveals a set of repeating patterns and approaches, which are considered useful tools in the process of economic advancement. Having consulted pertinent literature the following part of the present paper is to present a selection of corresponding strategies, which aim to improve performances of economical actors.

a) The increased size of economical actors

With regards to economical performances pertinent literature correlates the factor of size of a company with its ability to act in economic terms. In order to differentiate between the different sizes of companies mainly the terms: micro enterprises (with less than 10 people employed), small enterprises (with 10-49 people employed), medium-sized enterprises (with 50-249 people employed), small and medium sized enterprises (SMEs) (with 1-249 people employed) and large enterprises (with 250 or more people employed), are being applied in corresponding discussions and contributions (Eurostat, 2018a)[4]. Small and medium-sized enterprises

1 It needs to be stressed at this point that due to the capacitive limits of a paper of the present format and its thematic focus, no highly needed ethical analysis of trading actions of economical actors is being conducted in the present paper. A short suggestion for corresponding research designs can be found in the context of the conclusion/outlook of the paper. For critical thoughts regarding ethical questions of trade as well as unfair trading practices within the food supply chain, which are being combined with suggestions towards possible improvements of corresponding procedures, see: Blizkovsky and Berendes (2016)

2 Due to the capacitive limits of a paper of the present format, contents being presented can only be selected on an exemplarily- and not on a representative or fully comprehensive level. As a result, the present paper merely understands itself as a medium, which provides ideas for existing discourses, and by no means as a work that asserts a claim of generality.

3 Besides the enrichment of the discourse and the consequent addition of topics which can be discussed and focused upon through the consultation of also non-agricultural based economic perspectives within the discourse(s), the connection between general and recurring economical approaches in the German agricultural sector also opens up a more contextualized insight in the German model of agriculturally related economic success and allows a better comprehensibility of corresponding procedures for economical actors or bodies who possibly aim to adopt certain measures.

4 Whereas certain characteristics of the three types mentioned can differ depending on the particular definition used to characterize them, besides the rather consistent defining variable of the number of people employed in context of a particular business, the quantity of people managing the data and IT-services of a company is also taken into account. While Small and Midsize businesses (SMB's) mostly employ part-time individuals, who manage the data and/or IT services (in some cases the organization even outsources this task to third party contractors), SME's have full-time employees who organize tasks such as managing backups, working with databases, new technology purchases etc.). Large enterprises, however, do need the service of full-time, experienced and specialized IT-staff, which is responsible for data processing due to the quantity of data being produced in context of a large enterprise (Wendt, 2011).

(SMEs), which mostly form part of an enterprise group, appear to be a focal point in shaping enterprise policy in the European Union[5].

Besides the structural differentiations that are being conducted in terms of the size of companies in pertinent contributions a significant amount of publications state a correlation between the size of a company and its capacity to perform economically successful. Consulting corresponding contributions it can be observed that within diverse domains of modern economy the increased growth of a company is connected to a higher financial outcome. A key term in this context is the terminology of the resource.

"In the typical SME, money is tight. The result is that SME manufacturers often lack access to resources that large manufacturers routinely have at their disposal, and therefore the SME's approach to implementing change needs to be altered to reflect this reality." (McLean, 2015: 2)

Besides access to financial goods, which differs between smaller and bigger companies, putting them in unequal trading positions, the term resource encompasses several other elements. Consequently, resources are generally described as instruments that can be applied and activated by a certain actor in order to achieve certain goals (Coleman, 1973: 1; Preisendörfer, 2011: 28)[6]. Through processes of merging several resources which according to the renowned American sociologist James S. Coleman can be subdivided in both 1) transferable resources such as financial capital and 2) personal resources such as e.g. knowledge, contacts or several other capacities. Especially corporative actors like large businesses, are generally considered able to perform more effectively economically than actors, which possess fewer resources (for more information: Preisendörfer, 2011: 28-32). Following the argumentations being presented above the merger between different businesses or the increased growth of a single business, which increases the number of resources that can be activated in trading situations, can have the potential to influence the economic performance of a business positively[7].

b) Push- and Pull strategies

The consultation of economically based literature reveals two major principles, which can be applied by economical actors in context of their performances: namely push- and pull strategies[8].

An economical actor who applies push strategies within its economical performances proactively tries to sell its products to the costumer and to push him to some extend into the market situation and the position of being interested in a product (Kleinaltenkamp and Rudolph 2002: 291). In order to increase its profit the selling company tries to provide the consumer with incentives (ibid. 292). By doing so the business sees itself confronted with the situation of both 1) building up distribution channels and 2) persuading retailers and middlemen to stock their products. In order to convince corresponding retailers to include a product in their product range direct promotional techniques like the establishment of rather personal relations with representatives of the retailers are often fostered. Following the push technique tends to work out particularly well when dealing with lower value items which can be obtained by consumers spontaneously without having to reflect too much about their decision of buying the product or not (Gibson, 2017)[9]. Whereas rather young businesses often adopt push strategies in the selling process of their products, as they economically need to generate a retail channel in order to promote their products, already established companies most likely adopt pull strategies in context of their economical performances. When adopting pull strategies an economical actor clearly reacts with its productions or services to the consumer's demands (ibid.). Due to this demand, the step of deeply convincing a retailer of including a company's product in their product range can be mainly left out. Considering the scenario which opens up when pull strategies are being adopted by economical actors the credo of supply and demand can be observed clearly. By investigating and observing market, developments and processes an economical actor orients its production to the consumer's demands and ensures to a certain extend the potential acceptance of its products which shall be disposed (Rätsch and Bazing 2010: 664; Claßen, 2015: 27-28).

Considering the scope of pull strategies, it becomes clear that actors, which apply corresponding strategies mainly,

5 At this point, it is important to stress that enterprises, which belong to the category of SME's, appear to be of a highly heterogeneous nature. Consequently, corresponding enterprises differ in terms of their ownership structures, their varying numbers of employees as well as their levels of economic activity (for more information consult e.g.: Airaksinen et al. 2015).

6 Pertinent literature reveals different forms of actors, which are considered capable of conducting actions. Whereas the differentiation between individual and supraindividual actors remains on a rather broad level (Matys, 2014; Raich, 2006: 14-15; Lotz, 2008) other works stress extensively the theoretical actor models of individual actors, aggregates as well as collective- and corporate actors (among others: Raich, 2006: 14; Dolata and Schrape 2013: 20, 26).

7 Besides the differences of the organization of different sized producing companies and their access to resources, their product range also tends to be different. Whereas SME's rather focus on the production of both highly customized and engineered products which in turn are mainly delivered to local markets or leveraging local services, large enterprises within in manufacturing sector tend to concentrate on mass production within the field of low-cost economies. SME's are principally not involved in the manufacturing domains of the automotive or aircraft sector (McLean, 2015: 2). Unsurprisingly it can be observed that large enterprises tend to create a higher proportion of value added within the 'high and medium/low tech manufacturing' sector, whereas SMEs create a higher proportion of value added in the sector of services (Airaksinen et al. 2015).

8 The following considerations remain due to the formal limits of the present paper on a rather broad level. As a result it will not be focused too much on the question when and in which context particular strategies can be applied. For more detailed information as well as for interesting insides in hybrid forms, consult: Claßen, (2015).

9 Besides the adoption of push strategies in terms of the sale of lower value items, push strategies often tend to be applied in the trading sector, the processing industry and the service industry (Kleinaltenkamp and Rudolph 2002: 292).

adjust their product range to already existing markets (Lindgreen et al. 2010). Fostering a strong market orientation companies adopting pull strategies, thus, need to bear in mind different market stages in which diverse clients/consumers of their products develop diverse expectations towards the company's products. As a result it appears to be of a great importance that economical actors analyze, depending on the particular market stage, their clients which in turn can range from suppliers and producers to other companies or single private consumers who eventually buy the end product. As further factors which are significantly being considered by market oriented companies applying pull strategies the offers and the product range of competing companies as well as the standards of regulatory authorities can be named (Dickson, 1992; Kohli et al. 1993). Summarizing finally the key actions being conducted by companies which act according to the market Kohli and Jaworski (1990) name the three aspects:

1. Generation of market-related knowledge about both customers and competitors
2. Distribution of corresponding knowledge inside the company
3. The ability to react on the basis of corresponding knowledge and be consistent with the market concept

c) The development of new markets

Observing companies on a global scale at times of globalized production flows and heavily interconnected business to business trading actions within the realm of heterogeneous economic sectors, the observation that especially highly ranked companies (or the ones with substantial economical aspirations) are willing to take advantage of global trading developments which had been developed successively in the last decades (for substantial information on the topic: Giese et al. 2011) can be made. Whereas the trend of crossing national borders in order to trade on a global scale seems to be almost subconsciously linked to enterprises performing in upper economical dimensions, the reasons why a certain company decides to trade on a global scale can be, from a strategic point of view at least, very different. Reasons why an economical actor decides to trade on a global scale, following pertinent literature, may range from 1) economical as opposed to non-economical motifs, 2) offensive as opposed to defensive motifs and 3) corporate strategy motifs. Corporate strategy motifs in turn also tend to be subdivided in 3a) procurement-oriented motifs (resources strategies), 3b) marketing-oriented motifs (market strategies), 3c) cost- and return oriented motifs (efficiency strategies) and 3d) knowledge based motifs (network strategies) (Koopmann and Franzmeyer 2003; Haas and Neumair 2006; Giese et al. 2011: 43-46).

1) Economical motifs encompass the company's interest to maximize the own financial outcome by means of an increase in sales or the market share. Negative economic developments shall also be compensated. Non-economical motifs, however, encompass the interest to develop a certain business image and/or forms of power and influence.

2) Offensive motifs can be diagnosed if a company is willing to make us of competitive advantages as well as advantageous differences between the home- and the host country. Because of offensive motifs, foreign markets can be opened up successively. If a company, however, is for some reasons forced to trade on a global scale, for example due to a partner business, which expands its trade and asks a supply business to do the same, it follows defensive motifs.

3) Whereas 3a) Procurement-oriented motifs rather focus on a sustainable procurement of raw materials which are needed to maintain their own production (e.g. China tends to import raw materials from abroad in order to continue with its expanding economic growth as an industrial nation (Heinrich, 2009)), 3b) marketing-oriented motifs concentrate on an economic penetration of foreign markets by stabilizing sales quota and market shares. Furthermore 3b) tries to protect employment in the home country by means of successful deals being made abroad (Nuhn, 2007). Of a growing importance especially 3c) cost- and return oriented motifs as well as 3d) knowledge based motifs can be considered. While 3c) target on price reductions of a company's production process which shall be reached e.g. by outsourcing the production to foreign countries, 3d) stresses the importance of Tacit knowledge which describes locally bound knowledge that can only be accessed when being present in person at a particular place. As a result it can be observed that a growing number of multinational companies invest in research- and development activities in order to get useful insights in regional market structures and procedures (Koopmann and Franzmeyer 2003).

d) The processing industry

Considering modern economic actions and literature the processing sector seems to be of an unchanged important kind in contemporary economics, too. In contrast, however, to bygone times when the processing sector was considered important because raw materials could not be stored for extended periods of time without getting rotten, modern food processing is not too much limited to the conservation of food, due to a spread of conservation technologies in industrialized countries households. It "[…] now has [,however,] increasingly sophisticated levels of microprocessor control to reduce processing costs, enable[d] rapid change-over between shorter production runs [and] improve[d] product quality and to provide improved records in management decisions." (ibid. 4). As a result of the technological progress in industrialized countries and accompanying consumer's expectations towards the 1) availability and 2) time-saving preparation of qualitative food, food processing companies seem to deeply meet the consumers' needs as they are able to produce food of highly different kinds by means of steadily improving processing technology (ibid. 4; Bhattacharya 2014). By doing so the processing sector enables a diversification of the economy by moving away from relying only on primary products. Processing companies do have the advantage of rather easily getting specialized: a circumstance, which helps them together with the conduct of market analysis to react to grown and diverse expectations of modern consumers (Pettinger, 2016)[10].

10 Due to the capacitive limits and the focus of the paper a necessary discussion about the quality of processed food in connection with possible health implications when consumers tend to consume corresponding products only, cannot be provided in context of the present paper.

Due to the technological improvements in the processing sector which allow companies to meet the expectations of contemporary consumers it does not come as a surprise that food processing has become a global industry (Fellows, 2009: 5)[11]. Considering the high sales of processing factories on the global level interesting parallels between the EU and the U.S. Food Processing Industry, where the food processing industry is considered a major contributor to the "health of the [...] economy" (Myles, 2013: 103), could be drawn. The U.S. food processing industry produced more than $1.08 trillion in economic output, including also $812.26 billion direct economic impact and furthermore $275.17 billion in indirect economic impact in 2010. The immense influence of the sector generated in this context about 1.93 million direct jobs within the food industry, as well as another 10.747 million indirect jobs which would not have existed without the activities of the U.S. food processing industry in 2010 (ibid. 103)[12].

COMPARING ECONOMIC STRATEGIES AND FINDINGS WITH ECONOMIC PROCEDURES OF GERMAN AGRI-FOOD BUSINESSES

Having worked out frequently mentioned economical trading actions being dealt with in pertinent literature or studies which suggests ways of improving economical performances of companies and enterprises, the following part of the present paper investigates, by means of empirical considerations and observations, to what extend selected German agricultural enterprises, the German agricultural sector in general and other German business programs act and work according to the strategies being extracted from the literature mentioned.

a) The size of German agricultural companies

Taking into account the German reunification in 1990 in context of the German performance in agricultural business it can be noted that despite of all the challenges related to the merger of West and East, Germany registered immense comparative cost advantages compared with France through the reunification. As one key factor the successive growing of single agricultural businesses in Germany can be mentioned (Damave, 2017: 3). Considering especially the milk sector in Germany and France the economic importance for businesses to grow in size which above was being investigated from a theoretical point of view can be approached practically on an exemplarily basis. French milk businesses seem to be in a position where it is important to change their marketing strategies more towards German agri-food businesses in order to 1) recognize conducive markets, 2) increase their profit margins and 3) reduce their production costs. The three changes mentioned are in this context linked to structural changes of many single businesses which following argumentations in literature need to find ways of growing in size. According to corresponding suggestions it does not come as a surprise that the number of French milk businesses is already only half as high than in was twenty years ago, even though the amount of milk produced by each business has been doubled (ibid. 5)[13].

Moving away from historical or product specific perspectives in context of an comparison between Germany and France, the latest German agricultural development in an isolated manner, reveals further trends of a decrease of single and small agri-food businesses in times of increasing financial outcomes for larger or collaborating companies. A promising insight here serves the observation of the decreasing number of agricultural holdings in Germany while the utilized agricultural area (UAA) remains relatively stable. Counting in the year 2000 still 399 350 agricultural holdings in Germany, in 2010 the number of holdings had been reduced to 299 100. Interestingly enough in this context is the fact that while the number of holdings had been reduced successively, the UAA only decreased by 1.4 %. Consequently, the average area per farm grew remarkably (+31.6 %) in Germany, namely from 42.4 hectares per holding in 2000 to 55.8 ha in 2010. By implication, this development "means that Germany, whose agricultural structure had already proven to be characterised by large area farms in 2000, recorded one of the highest average UAA within the EU-27 in 2010." (Eurostat, 2018b)[14]. Considering in this context also the average size of German agricultural holdings, a clear tendency towards the emergence of more predominantly grown agricultural holdings in contrast to enterprises, which dispose of smaller areas of land, is revealed. Hence farms with 10 to 19.9 hectares of UAA appear to be the most common as they represented 21 % of the entire population of agricultural holdings (63 160). The second highest share was reported by farms with 50 to 99.9 hectares (51 620), which represented in turn 17 % of the German agricultural holdings in 2010. Quite a similar share was registered by holdings with 5 to 9.9 hectares of agricultural area (16 %) (ibid.).

Speaking about revenues of large agricultural enterprises which are based in the EU, COGECA (now called: the

11 What has to be noted, however, is the critical situation in 2005 already when thirty companies accounted for a third of the world's processed food. Five companies controlled 75% of the international gain trade (Fellows, 2009: 5).

12 By generating a higher value added manufacturing has the potential to enable higher wages than the primary sector (Pettinger, 2016).

13 Measuring the competitive performance of EU countries through the trade indices: Export and Import Market Share, Revealed Comparative Advantage, Net Export Index and Vollrath indices Carraresi/Banterle (2013) revealed that among the big EU countries especially France and Spain record a continuous worsening competitive performance. Germany shows a significant difference concerning competitive trends between agriculture and food industry. Whereas Germany became the leading power in the food industry of EU it is not considered to record corresponding achievements in the agricultural domain only (Carraresi and Banterle 2013).

14 As the other side of the coin the great decrease of people, working on the farms must be mentioned. The number of regularly working people on farms decreased by approximately one fourth (ibid. 2018).

General Confederation of Agricultural Cooperatives in the European Union)[15], released a report which corresponds to theoretical assumptions which underline the advantages of rather large enterprises. Consequently, the report revealed that the Top 100 corporately organized agricultural businesses once more could increase their revenues in 2013 in comparison to 2012 by 14 % on average (Agrarheute, 2015). Among the Top 10 businesses, three German agricultural enterprises can be found. Namely: BayWa AG with a revenue of 15 957 billion Euro, Agravis with a revenue of 7 844 billion Euro and DMK with a revenue of 5 310 billion Euro[16].

b) Pull strategies

Looking at German agri-food businesses on a broader scale it can be observed that unlike French businesses an increased number of German agri-food businesses pursue pull- and not push strategies in context of their production. Consequently, German agri-food businesses tend to focus primarily on consumer's or other food-chain actor's needs. In contrast to the German market orientation the focus of France principally lies on regional planning/development, the preservation of an ideally high number of farmers and finally on the high quality of regional products (Damave, 2017: 4). The rather pragmatic and market oriented focus of German agri-food businesses can be illustrated on an exemplarily basis by means of the BRÖRING Group which was founded in 1891 in Dinklage (Northern Germany) and is considered to be one of the leading feed production companies in its region[17].

Even though the company fosters a rather traditional commodity-based production it produces 1.2 million tons of feed depending on detailed costumer consulting. Consequently, the BRÖRING Group heavily adjusts its production towards different key actors among the food supply chain, namely: farmers, retailers and consumers (Bröring, 2010: 63). As key tasks in context of the acquisition of market related knowledge, the BRÖRING Group tries to both establish and keep deep costumer relationships, which undergo multilayered structures inside the company itself in order to transfer the knowledge being gained into economically relevant information that is being included in the production process. By doing so, the BRÖRING Group follows to some extent Grunert et al. (1996) who in their lines of argumentation can be considered as one of the first advocates and connectors of market research approaches and agricultural food supply chains. Following the logic of the authors, a higher market orientation offers great potentials not only in terms of a financially reasonable production process itself but also concerning advantages over competitors in the field (Grunert et al. 1996). As another source of information which is considered important in production processes the BRÖRING Group which is a member of the German feed producers association (DVT) the business group follows legal developments which can have influences on the feed production sector. Considering finally the actions being conducted by the BRÖRING Group in order to improve its economical performances with regards to its production the three dimensions of 1) the generation of market-related knowledge about costumers and consumers, 2) the distribution of corresponding knowledge inside the company and 3) the ability to react on the basis of corresponding knowledge and be consistent with the market concept, by Kohli/Jaworski, (1990) which were being presented in the theoretical part of the present paper can be determined.

Moving away from concrete German agricultural businesses the focus and value of market orientation, which is being pursued by, pull strategies within wide parts of the German agricultural sector, can also be identified by means of the Market-Oriented Agriculture Programme in Ghana (MOAP) which is commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). In context of the program, which is co-financed through the EU, the focus lies on the value chains for mango, pineapple, citrus fruits, vegetables, rice, sorghum, soya beans, peanut and cashew. Advising and instructing political decision-makers and state agricultural advisors the program aims to make products correspond to market mechanisms and safety standards as the latter led to consumer's complaints in terms of exported food as well as goods sold within Ghana itself. Production according to the EU organic farming guidelines shall help in this context to sell products both nationally and internationally for higher prices. Furthermore, MOAP trains the staff of the responsible public authorities in the particular region on maintenance and is additionally willing to promote private investments in order to benefit the provision of agricultural infrastructure and services for farmers in Ghana. Entrepreneurs are also provided with further training on implementing inclusive business models like

15 COGECA currently represents the interests of approximately 40 000 farmers' cooperatives employing approximately 660 000 people. It serves as the main representative body for the entire agricultural and fisheries sector in the EU (COPA COGECA, 2018).

16 Widening the perspective towards businesses, in general economic advantages of rather grown enterprises can be observed analogously. Collating the theoretical assumption that a growing size of a company is to be set in connection with a higher financial outcome with statistical data, corresponding findings underline corresponding assumptions. Whereas micro enterprises register mainly an annual turnover of max. 2 Million Euro, small enterprises already register an annual turnover of max. 10 Million Euro. Medium-sized enterprises finally register an annual turnover of max. 43 Million Euro (European Commission, 2018). Comparing particularly SMEs with larger enterprises the stronger economic performance of the latter appears to be obvious when considering the variables of export and import intensity in particular. Whereas for example in Latvia the difference between the two variables mentioned does not appear to be as striking as for example in Germany or Denmark it can be observed that all large enterprises which were based in six different countries (Denmark, Germany, Latvia, Netherlands, Finland, Norway) perform significantly stronger when it comes to import and export actions than all SMEs that were analyzed do (for more information: Eurostat, 2015).

17 The BRÖRING Group consists of the three German agri-food businesses: 1) H. Bröring GmbH & Co. KG, 2) Haneberg und Leusing GmbH & Co. KG and 3) BEST 3 Geflügelernährung GmbH (BRÖRING, 2017).

for example forms of contract farming (GIZ, 2018)[18].

c) The development of new markets by German agri-food businesses

Besides, several other conditions leading to changes of the food industry, especially in Germany the "growing internalization of markets" (Weindlmaier, 2000: 9) significantly changed the kind of marketing and sale of products (raw materials, processed food, agricultural technology etc.)[19]. As one of the main reasons why German agri-food businesses in particular tended to and still develop new markets, Weindlmaier mentions the growing number of competitors in the German agribusiness itself. In this context he eventually concludes that a) the size of the German population which encompasses about 80 million consumers as well as b) the high purchasing power of German consumers and finally c) the good infrastructure in the country lead to a growing number of national competitors within national markets and the decision of many agri-food businesses to develop foreign markets and to export their products.

Bearing in mind, thus, global food chains and markets, German agricultural and food industries appear to be well positioned. Besides the circumstance that Germany has for many years not only been the third largest overall exporter of agricultural goods but also the No. 1 exporter of confectionery, cheese, pork and agricultural technology, German agricultural exports continued to develop positively in 2015 by reaching a new peak (approximately 68.5 billion Euro) through the successive development of new markets and the achievement of growing sales markets in foreign countries. Besides supplying foreign markets with food, German agri-food businesses exporting agricultural technology significantly contributed with around 7.4 billion Euro to the high sales of the whole German agri-sector. Even though the EU remained the most important sales market for German agricultural goods in 2015 with three quarters of all exports (also 67 % of all imports came from the other Member States) and a corresponding rise of around 2 % (49.2 billion Euro), German agricultural exports to third countries developed with a growth rate of 6 % even more dynamically than those to the EU Member States (Federal Ministry of Food and Agriculture, 2016; Graupner, 2018)[20]. Whereas the observation of the German agricultural sector, thus, clearly indicates how important the development of foreign markets appears to be, French agri-food businesses mostly foster mid-market-strategies in combination with regional specialties (Damave, 2017: 5)[21].

Besides the circumstance that German agriculture, as indicated by the numbers presented above, highly profits from its exports and the development of new markets where German products can be sold, the general interest of the German agricultural sector to access new markets can be illustrated by an export promotion program which was launched by the Federal Ministry of Food and Agriculture. The program aims to open up and nurture promising foreign markets for German products. In order to expand the number of exporting German agri-food businesses and to improve their competitiveness on foreign markets the program sets up lists of measures and training courses, which should lead to the desired outcome. Considering the focus areas of the program which range e.g. from helping the participants to reach a competence level where they are able to identify/contact potential partners, over to business-trips or setting up/expanding databases and internet portals etc., the focus of market oriented actions and the interest of developing new agricultural markets for German products becomes clear. Consequently, the program also encompasses education units towards market and product studies as well as separate market fact-finding trips which, just like the business-trips, take place outside of Germany (Federal Ministry of Food and Agriculture 2014). Concrete destinations of market-exploratory-tours being provided by the Federal Ministry of Food and Agriculture in this context are Russia (agricultural engineering or confectionery), USA (food in general), Canada (fruits and vegetables), France (food in general) and Taiwan (beverages) (Federal Ministry of Food and Agriculture, 2018).

d) The processing industry within the German agricultural sector

When comparing the German and French agricultural sector there appears to be a striking difference; whereas France significantly produces goods with protected designations of origins, German agri-food businesses often focus on the processing production of goods for the daily use. As a result, it can be observed that unlike the German agricultural sector the French sector is more oriented in its production towards rather high-ranked catering industries and not the daily consumption. Repeatedly France also put emphasis on the agricultural primary production (Damave, 2017: 3, 5). Due to the strong focus of the whole German agricultural sector on food processing it does not come as a surprise that this sector alone produced $190 billion which

18 Even though the program is scheduled for 15 years (from 2004 until 2019), appreciable results can be observed already. Besides the fact, that since the project has started, 30 000 jobs have been secured in agriculture and processing companies, it can be observed that since 2016 alone, even more than 12 000 farmers have been trained in good agricultural practice, 2 000 have been certified according to internationally recognized sustainability standards and prices paid to producers have increased by up to 50 per cent due to 1) certification, 2) contract farming and 3) improved cultivation methods (GIZ, 2018). For further information: GIZ, (2018).

19 Apart from an internationalization of markets, Weindlmaier also mentions an a) harmonization of legal conditions, b) Changes of political conditions, c) changes in food demand and d) changes in the food trade. For more information, see Weindlmaier, (2000: 9).

20 In 2015, Switzerland (1.8 billion Euro), USA (1.7 billion Euro), Saudi Arabia (plus 57 %) and the People's Republic of China (45 %) were the most important non-EU target countries of German agricultural products. German agricultural exports saw particularly high growth rates in these countries (Federal Ministry of Food and Agriculture, 2016).

21 Comparing the export of agricultural products of France and Germany, the strong focus of German agri-food businesses which aim to export their products to foreign markets becomes clear. Whereas France exports agricultural products of a value of 62 244 million Euro to foreign markets, Germany gets 1 445 586 million Euro for agricultural products (Eurostat, 2018c; Eurostat, 2018d).

accounted for 5.4 % of the German GDP in 2016[22]. The in total 5,940 food processing companies that employ about 570, 000 people, only underpin the relevance of food processing within the German agricultural sector (Lieberz and Bielinska 2018: 1). Closely connected to the food processing industry is the aspect of food innovation. By being able to fall back on a great variety of highly heterogeneous products (either natural in a first step or already processed) food processing businesses have the strong potential of designing new types of products which can be placed on the market with or without previously conducted market/consumer analysis. Looking at annual surveys in this context, it becomes clear that managers of German industry already approximately twenty years ago tended to consider product innovation as the most important condition for the success of their company in a respective following year (Bergen et al. 2005: 307). Even though the evaluation of product innovation appeared to be positive in 1998, only a marginal amount of money was spent for research and development of food innovation. Resulting from the small investments being made in food innovation in the past a decreasing number of new products in 1998 had to be accounted (ibid. 307).

The wide product range of the food-processing sector in Germany covers various food ingredients. By acquiring highly different agricultural goods in the first bit of the food chain, food processing not only can valorize its own economic value and importance but also the businesses of a variety of differently specialized regional producers that have the possibility to sell their products to retailers or consumers directly as well as to food processing companies. Due to the circumstance that only particularly large processors tend to import ingredients directly from foreign suppliers, food processing has the potential to support and to strengthen national agriculture businesses as mainly products of local producers or local importers appear to be of interest for German food processing businesses (ibid. 4). Besides being one of the main customers for producers and consequently strengthening figures of the German agricultural market, food-processing enterprises serve as a driving force for an increase of products with a rather high value added within the German agricultural market[23]. By acquiring in a first step agricultural commodities that in a subsequent step are processed, higher value products are produced by processing businesses (Gonzalez, 2014). According to Weindlmaier, (2000: 1), the interest for higher valued products appears to be divided in two aspects:

1. Speaking about processed food the consumer's satisfaction concerning the processed products acquired derives not so much from the farmer's raw materials but from decisions being made by downstream elements of the food chain.
2. For farmers it is important that downstream subsectors of the food chain can manage to transform agricultural products into (high) value-added products which in turn can be sold at an appropriate price.

MATERIALS AND METHODS

In order to estimate the relationship of different bivariate measurement data and conclude whether there are associations between two variables in the case of both Germany and France, scatter plots are used. All of the data have been deducted from Eurostat (Eurostat, 2018c; Eurostat, 2018d), except the data representing the added value of agriculture (World Bank, 2018). The variables a) added value of agriculture and b) regular labour force as well as c) number of agricultural holdings are considered in the time period between 1995 – 2010 in the context Germany and between 2003-2010 in the context of France. The variables a) added value of agriculture and d) No. of enterprises of drinking milk are considered in the time period between 2003-2009[24].

The combined value of the two variables on both axes is a single data point that is displayed in the scatter plot. All the combined data points are presented in clusters and thus form a scatter plot, which serves only for identifying the trend and the correlation of each relationship. The correlation coefficient (r) of each relationship has been calculated. A scatter plot has been used as it demonstrates or refute cause-and-effect interactions, although it does not by itself show that one variable reasons the other. In fact, a scatter plot demonstrates that a relationship occurs (correlation exists) but it does not and cannot prove that one factor is causing the other[25]. There could be a third influence involved, which is causing both or some other systematic source. However, the scatter plot can form the basis of future discussions on the topic and the promising start of further investigations in terms of particular research designs.

RESULTS

On the relation between the net output and the labour force, it can be concluded from Figure 1 that in Germany the net output of agriculture sector is nearly not correlated (r = -0,1456) to the labour force dedicated to the agricultural work while in France this is not the case, as there is a moderate positive correlation (r = 0,4593) between the two variables. Following the results from the scatter plots being observed it appears to be striking that an increasing number of people working in the German agricultural sector do not imply a rise

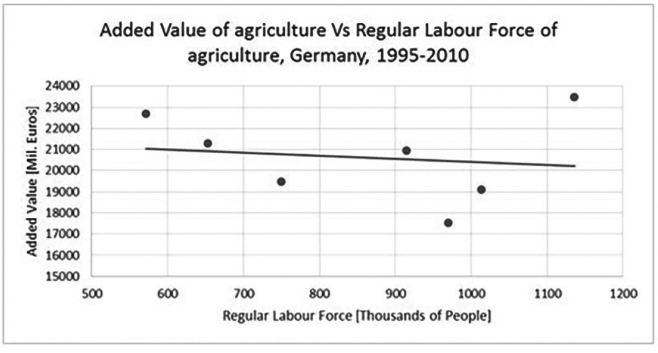
22 The largest subsectors in this context by value were meat, dairy, bakery, confectionary, ice cream as well as alcoholic beverages (Lieberz and Bielinska 2018: 1).

23 For detailed and comprehensive information about the value-added chain in general and in Germany particularly, consult Weindlmaier, (2000).

24 The reason for the lack of consistency in the range of years for each plot is that no data has been available for those years and for all the variables tested.

25 In context of future research on the topic, it would form an interesting basis of investigation to investigate in which way the variables considered within the paper are causing each other.

of the added value. Consequently it would form an interesting basis of investigation if possibly a particular or a set of the economic strategies being conducted by the German, in contrast to the French agribusiness or the state, lead to a rise of the added value without being dependent a rising number of workers. As it was indicated above that the rise of the added value which in the German case is not particularly related to an increasing number of workers the rise of the added value in Germany could be ascribed to its strong processing sector which generally has the strong potential to influence in turn the value added chain of a country. Regarding this possible observation, further investigations do seem reasonable in this context.



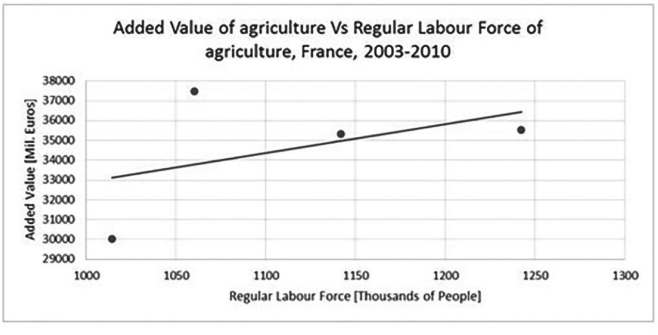
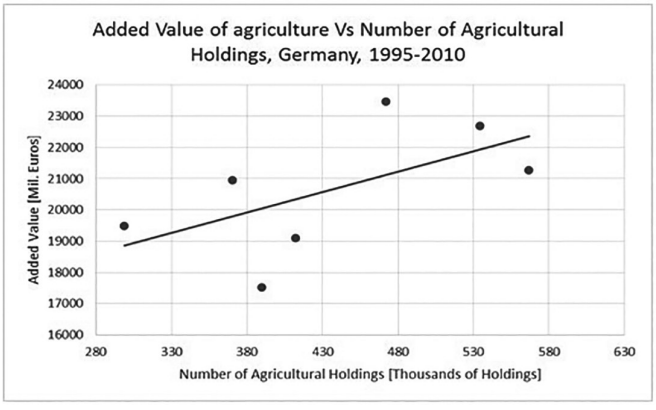


Figure 1: Added value of agriculture to labour force correlation in Germany and in France

On the output-number of holdings relation, both in Germany and in France exists a positive relationship between the net output of the agriculture sector and the number of agricultural holdings. In Germany the relationship is stronger than in France with a correlation coefficient of 0,5939, contrary to 0,3825 for the latter (Figure 2). Observing the results, it gives the impression that specifically the number of people working in the German agricultural sector do not lead to an increase of the added value but the number of agricultural holdings[26]. Consequently, it could be investigated how it is possible that obviously the inner structure or the institutional landscape in German holdings/economy seem to be so different to the ones in France that not the number of people appears to be of relevance concerning a rise of the added value but the number of agricultural holdings. Against the background of part one of the paper it seems again thinkable that this correlation is based on the strong processing focus of many German agri-food businesses.



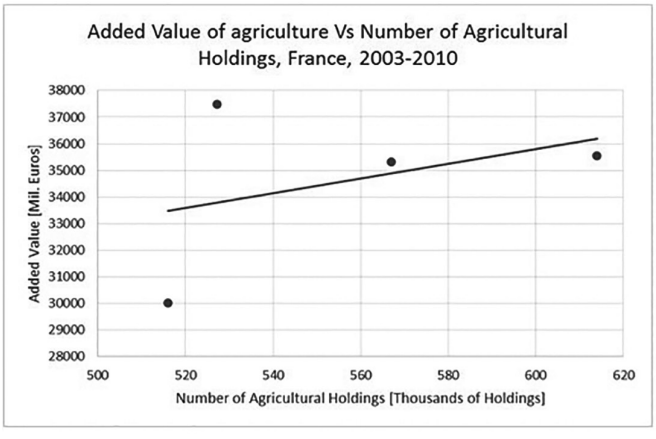
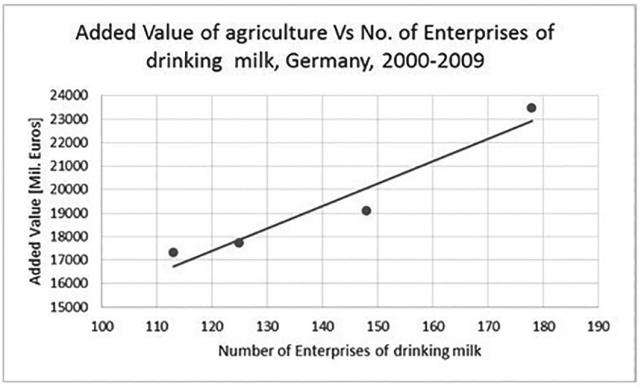


Figure 2: Added value of agriculture to number of agricultural holdings correlation in Germany and in France

Whereas both in Germany and France exists a positive relationship between the net output of the agriculture sector and the number of agricultural holdings, considering the net output of agricultural sector and the number of enterprises of drinking milk, it appears to be interesting that a controversial relationship for Germany and France can be found in this context. As Figure 3 shows, in the first case an almost perfectly linear relationship exists ($r = 0{,}9654$) while in the latter almost no correlation exists between the set of bivariate data ($r = -0{,}2235$). Considering especially the fact that meanwhile the number of French milk businesses is only half as high than it was twenty years ago while the amount of milk produced by each business has been doubled, appears to be an interesting field for further analysis in terms of existing discourses[27].

26 Based on the indicator Farm Net Value Added (FNVA) per Annual Work Unit (AWU) by Farm Accountancy Data Network (FADN), the agricultural holdings with the highest income per working unit were inter alia located in northern France and north-western Germany (European Commission, 2014: 9).

27 Another interesting element of investigation could be the role of technology within the dairy sector. Whereas studies revealed that in Germany, Ireland, Italy and Portugal technology is labor saving, in France, Bulgaria, Denmark, United Kingdom, Hungary, the Netherlands, Sweden and Serbia technology appears to be more labor using within the dairy sector as compared to other processing sectors (Čechura et al. 2014: 22).



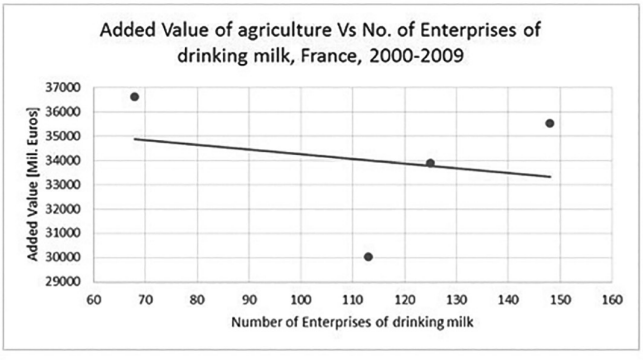


Figure 3: Added value of agriculture to number of milk processing companies correlation in Germany and in France

CONCLUSION AND DISCUSSION

The paper focused on two intertwined focal points:

Unlike a variety of academic contributions which deal with best-practices in the realm of agriculture business (e.g. in Germany or other country-specific contexts) the major topic of this paper was theoretically speaking, to look beyond the strong economic performance of the German agriculture sector by theorizing a selection of concrete economic procedures being conducted by German in comparison to French agriculture businesses. By analyzing the economic success of German agriculture from rather general economic perspectives and not only from agriculture-specific economic literature the paper aimed to extend existing discourses on the topic by means of economic perspectives which are not necessarily set in context with the agricultural domain. As a consequence the economic topics/procedures: a) increased size of economic actor, b) push and pull strategies, c) the development of new markets and d) the processing industry, were set in a broader theoretical context in order to not only enrich the existing discourse(s) by presenting non-agricultural based economic perspectives which can be discussed and analyzed in this context, but also because the theoretical contextualized classification of German agricultural procedures in a broader sense tend to make respective strategies more comprehensible and consumable for economical actors or bodies who might be willing to adapt certain strategies, themselves.

As a result the analysis revealed that German companies are characterised by the fact that they are larger than French companies and could thus maximise their profits. French agricultural businesses are generally smaller, but also more numerous. If one looks at the trade strategy orientation of German companies, it is noticeable that they act more market-oriented, i.e. apply pull strategies. French companies tend to focus more on quality products and regional production. The German agricultural sector is also characterised by the fact that new markets are constantly being opened up and a focus is also placed on food processing and food innovation. French companies are not designed to produce for daily needs, but rather target rather high-ranked catering industries.

Secondly the paper presented a set of scatter plots which dealt with the German and the French agricultural sector in order to deliver further topics for existing discourses which could be set in context with findings being presented in the first part of the paper. The correlations between 1) the added value of agriculture and the regular labor force, 2) the added value of agriculture and the number of agricultural holdings and 3) the added value of agriculture and the number of enterprises of drinking milk, were considered. As a result the statistical comparison between Germany and France showed that: 1) unlike the French case, the rise of the added value of agriculture in Germany is not particularly related to an increasing number of workers, 2) the number of agricultural holdings has a stronger influence on the added value of agriculture than is the case in France, and 3) an increasing number of dairy farms in Germany correlates almost linearly with the added value of agriculture. In France exactly the opposite is the case.

Against the background of the major findings of the paper as well as its systematic approach towards the topic of trading/business practices of German agri-food businesses, it must be concluded that the interest to contribute new aspects to existing discourses which deal with economic improvements within the realm of agriculture being pursued in context of the present paper can only be seen as a beginning of a complex and long-term project. In context of further studies it would therefore form an interesting basis of investigation to observe further trading practices (not only practices being conducted by German agri-food businesses) in order to ensure and enable comparisons which can lead to economic improvements on a broader level. Theorizing and relating corresponding practices to different schools of theory, as done within the present paper, can help to analyze procedures rather abstractly and therefore more comparably. Extending topic-related discourses by means of ways of economic thoughts, which have not been considered in the past in content-related, works or discussions can help in this context to generate new perspectives on the topic. Following this idea it seems probable that through the addition of corresponding theoretical backgrounds to the debate, a great variety of not only advantages or disadvantages of trading actions in certain economic scenarios could be investigated, but also different forms/expressions of actions being conducted by agri-food businesses. Considering only 1) on a descriptive level concrete actions being conducted by agribusiness or 2) corresponding actions against the

background of only agricultural-related theory, seal further ways of discourse which in the end could play a beneficial role in the economic improvement of agri-food businesses. The additional considerations of topics, which have been raised, with the help of the scatter plots being performed in context of the paper play, in terms of the extending of existing discourses, an important part. Findings respective speculations drawn from corresponding scatter plots can be connected to theoretical assumptions in order to draw a more detailed picture concerning the identification of factors that (can) play significant roles in the economic success of an agribusiness.

Another continuation of the findings and the approach of the present paper could also encompass an ethical analysis of trading practices of agri-food businesses. In context of such an investigation, it would appear to be a promising and socially relevant methodical strategy to examine not only economical scopes of trading practices but of course also its implications on affected people's lives. In relation to that also state actions and measurements which are to promote not only the economic but also the ethical quality of agricultural work and businesses must be embedded in broader theoretical backgrounds in order to add highly important new thoughts and suggestions to existing discourses.

Regardless of the concrete continuation of the findings and the approach of the present paper, the general adding of new and diverse perspectives to existing discourses in order to extend the realm of discussions and works within them, seems to be especially against the background of a continually growing (complex) economic world more than necessary.

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SCIENTIFIC PAPER

WHAT IS THE SUCCESS OF HIGH SCHOOL IT EDUCATION? AN INVESTIGATION INTO HIGHER EDUCATION STUDENTS' KNOWLEDGE OF SPREADSHEET APPLICATIONS

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Abstract: *Teaching Computer Science in higher education is imperative, even though today's students have been born into a world where technology is an essential part of everyday life. To efficiently master modern, business, technical and scientific knowledge and to proficiently produce quality results in a work environment it is crucial to have high level IT knowledge. In business, Excel is the lingua franca and so knowing how to aptly use spreadsheets is a must for our students.*

The primary objective of the authors was to examine the perceived and actual knowledge of spreadsheet applications of students entering higher education. Accordingly, a questionnaire and a practical assignment have been developed. In the questionnaire, students were asked to provide information concerning their previous IT studies and rate their knowledge of word processing, spreadsheets and database management. During the practical, students were asked to solve an Excel exercise taken from a high school Computer Science final exam at standard level. Out of the 666 registered students on our electronic education system (Neptun) at the beginning of the year, 557 took part in this survey, and following data cleansing and processing, 513 were considered in the results.

Looking at the results of the practical, the most significant proportion of students, 142 of them have performed between 0-10%. A total of 260 students have achieved less than 20% performance and 434 people, which is nearly 85% of students have accomplished less than 40%. Compared to the results from the self-evaluation questionnaire it is very poignant that the actual scores differ quite significantly (in both directions) from the perceived knowledge of the students.

Keywords: *Higher Education, Computer Science, Education, National Curriculum, Digitalisation, Spreadsheets*.
(JEL Classification: *20*)

INTRODUCTION

Students today starting from kindergarten all the way up to higher education can be considered to be part of generation Z. They were born into a world where computers, mobile phones and video games are an integral part of everyday life as we see it. The English literature has a more technical term to describe this phenomena, these people are digital natives, who speak the language of computers, video games and the digital language of the internet just as well as their mother tongue. Hence it begs to ask the question, do these students need a Computer Science education, can we teach them anything new, or does their intuitive knowledge cover the programs and applications that the job market could ask of them? Looking at job opportunities available for our students doing Economics and Agricultural Business degrees, we see that at least intermediate level computing skills as well as the usage of application softwares, creation of statistics and

graphics is required almost everywhere. Based on the 2012 National Curriculum we should expect students to possess this knowledge by the end of high school. To clearly document this, we have prepared a survey for the first year students at the Faculty of Agricultural and Food Sciences and Environmental Management and the Faculty of Economics and Business of the University of Debrecen and asked them to complete a self-evaluation on how well they think high school has taught them to use application softwares. We wanted to compare the self-evaluations against the actual knowledge of our student. In business, Excel is the lingua franca, so being proficient with spreadsheets is essential for our students. Hence we have asked our first years to complete the Excel questions from the high school Computer Science final exam at standard level of October 2015. In this article we will present the results of this survey, which is a representative sample of over 500 students from different degrees.

DIGITAL COMPETENCY AND THE 2012 NATIONAL CURRICULUM

The members of generation Z were born into the world of technology, so they do not know what the world was like without internet. For them, computers, smart phones and social networks are no longer just part of everyday life, but have become a necessity. At first, the previous generations have only wanted to exploit the potentials of Web 2.0, nowadays they use them as tools, but generation Z practically lives inside of it (PÁL and TÖRŐCSIK 2013).

In 2005, an American research showed that people between the age of 8-18 spend an average of 6.5 hours a day consuming different electronic mediums. When the researchers have started investigating the specifics of these results they have realised that this time actually counts for 8.5 hours. This 2 hours difference can be attributed to the fact that most teens multitask. What does it exactly look like, when we see our watching television whilst also scrolling on their phone? Research has shown that young people do not only surf the internet, but listen to music, chat to their friends whilst also doing their homework and running file sharing programs in the background. (WALLIS, 2006) Unfortunately, not enough time has yet passed to draw a conclusion on how this will affect learning patterns and abilities, relationships, creative outlets or simply our understanding of the world around us. (SÁGVÁRI, 2011).

The question asked in the introduction, do these students need a Computer Science education? has also been debated by Gabriella Baksa-Haskó in her article "Preliminary IT knowledge of Economics students". She believes the answer is yes, as it is similar to being fluent in our mother-tongue not excusing us from having to learn correct grammar. We take this idea further. First year primary school students are first taught how to read and write, and later comprehensive reading is introduced. Many children start primary school by already knowing how to fluently read and even how to write to an extent. In these cases, the teacher is responsible for differentiating between competency levels, making sure that all students are kept from being bored, and that children develop the necessary skills for text comprehension, since being able to read a text does not necessarily imply also understanding it. We believe that Computer Science is quite similar since here we are looking to extend on digital competency.

The question naturally arises, how do we understand digital competency and literacy? These two definitions have changed and evolved over the years as a result of technology advancing and expanding. (BAWDEN, 2001; BAWDEN, 2008; KARVALICS, 2012; VÁRALLYAI and HERDON 2011).

In the 2006 recommendation of the European Parliament and Council (EPC 2006/962/EC) we can find a detailed description of those skills and attitudes that are essential to the development of digital competency. „Digital competence requires a sound understanding and knowledge of the nature, role and opportunities of IST in everyday contexts: in personal and social life as well as at work. This includes main computer applications such as word processing, spreadsheets, databases, information storage and management, and an understanding of the opportunities and potential risks of the Internet and communication via electronic media (e-mail, network tools) for work, leisure, information sharing and collaborative networking, learning and research. Individuals should also understand how IST can support creativity and innovation, and be aware of issues around the validity and reliability of information available and of the legal and ethical principles involved in the interactive use of IST." (EPC 2006).

In Hungary, developing digital competency, knowledge of application softwares at intermediate level, the acquisition, interpretation and consumption of data and active participation in electronic communication were considered an integral part of the 2012 National Curriculum for Computer Science. In 2017, an IT Communication Uniform Reference Framework (IKER) was established in Hungary, which fits the European Digital Competence Framework and identifies the following areas of digital competency:

- Collection, use and storage of data,
- Digital, web-based communication,
- Creating digital content,
- Problem solving, practical applications,
- IT and communication technology security

Furthermore, a digitally literate individual is competent at securely using IT and communication technology, as well as search, distribute and create digital data. (IKER, 2017)

Since in business it is indispensable to be proficient in Excel, we have reviewed in detail the relevant parts of the 2012 National Curriculum Framework for Computer Science that are still in effect today. We have found that spreadsheet applications are taught in Year 10.

The Curriculum Framework places great emphasis on the students learning how to use spreadsheets to solve everyday problems and tasks that may arise in other subjects. By the end of Year 10, students should be familiar with a range of functions, financial, statistical, mathematical calculations, and are expected to solve questions on investments and loan related problems. Additionally, they are presumed to be familiar with sorting, filtering and visualisation of data.

Our years of educational experience has shown that our students are not in possession of all these competencies when entering university. To clarify this, we have designed a survey for the first year students at the Faculty of Agricultural and Food Sciences and Environmental Management and the Faculty of Economics and Business of the University of Debrecen. In this survey, students had to evaluate their level of knowledge regarding application softwares and then we have asked them to complete a series of Excel questions as part of a practical.

MATERIAL AND METHODS

In this survey, those first year students were considered from the Faculty of Agricultural and Food Sciences and Environmental Management and the Faculty of Economics and Business of the University of Debrecen who study Computer Science in their first semester. The questionnaires and the practicals were completed in the first week of the semester. Out of the 666 registered students on our electronic education system (Neptun) at the beginning of the year, 557 took part in this survey, and following data cleansing and processing, 513 were considered in the results.

This survey consisted of a paper based questionnaire and an Excel practical. The primary objective of the questionnaire was to assess the students' IT knowledge. We wanted to apperceive how many hours per week students spent on studying Computer Science in high school, whether they chose it as a subject in their final exams and if they had an ECDL qualification. We also put emphasis on learning how students rated their own knowledge in the different areas of Computer Science. For every area students had to self-evaluate how confident they felt about their abilities. We included 3 text editing, 8 spreadsheet and 4 database management categories, as we believe that these three areas are the most important and most commonly taught in higher education.

When defining each categories of interest, we aimed to create groups based on the exercise types present in Computer Science final exams such that when evaluating the results, we could efficiently compare the students' estimated knowledge to their actual knowledge.

From the above survey we only present those 5 questions on spreadsheet applications in this article that are related to the questions from the high school Computer Science final exam at standard level from 2015 October.

After completing the questionnaire we asked our students to solve some Excel questions to the best of their abilities. Students had 60 minutes to attempt these questions, and everyone has spent at least 20 minutes on the practical. The practical assignment was made up from the Excel questions in high school Computer Science final exam at standard level from October 2015. We wanted to test how students could carry out different operations and functions in Excel, so we slightly modified some of the exercises. Firstly, students were not given the data in TXT but in Excel format. Whilst this is a simple transformation to make, we wanted to eliminate the possibility of a student not answering any of the questions due to not being able to read in the data. Furthermore, since we wanted to test whether student could correctly apply Excel functions, to avoid reading comprehensive problems, in places we have inserted points of explanations.

For example in the practical given we had a the following question: The prices of gasoline and diesel do not always increase and decrease simultaneously. Using a formula, write out into the column titled 'asynchronously changed' the text "asynchronous" in those cases when the price of one increased and the other decreased (i.e. when their product is <0)! Otherwise, nothing should appear in the cell!

In the original question "i.e. when their product is <0" was not included. Here we have tried to avoid any student failing to use the IF function and avoid answering this question due to not being able to formulate a condition. We have made four such refinements.

We extended the practical with the following question: In columns G and H, calculate the price of gasoline and diesel in Euro. When creating the formula, use the cell reference L1! With the help of this question, we wanted to investigate if students know what an absolute reference is, and if they could use it.

We wanted to make sure that every student could solve the practical to the best of their knowledge so we drew their attention to the formatting tasks at the end of the practical, which are in nature very similar to Word formatting. Hence, if they have not used Excel before, they could have a look at these questions and possibly still solve some of them. We have also offered that those students who achieved a score above 80% could endorse their results as part of their first assignment grade.

When marking the practical, we have considered the original marking guide. By solving the practical perfectly, a total of 30 marks could be obtained.

RESULT AND DISCUSSION

The paper based questionnaire had questions for 8 categories on spreadsheet applications from which 5 were covered in the practical. We discuss these 5 below. When processing the collected data, we compared the self-evaluation grades with the practical results for each student.

In the first category, Spreadsheet Management 1 we focused on formatting and performing basic operations. We asked our students to estimate their level of knowledge of these.

In the Excel practical, there were a maximum of 9 marks that could be gained in this category. 2 marks for correctly performing two subtractions, 2 marks for a division and converting the result to percentage, 1 mark for setting up the formatting HUF/litre, 1 mark for indentation and 3 marks for border, fill and font style.

On Figure 1, the x-axis shows the estimated knowledge of students (on a scale of 1 (none at all) to 5 (confident)) and the y-axis their actual results in percentage, that is, how many marks they got in this category out of 9. The size of the circles is simultaneous to the number inside of it, it shows the number

of students falling into the same category. More precisely, it shows for example the number of students who predicted their knowledge to be 3, but actually achieved 0%. We opted for this type of chart since this way we do not have to group people into categories such as 80%-100% as that would lead to loss of data. This way, for any given prediction we can show the exact number of students who achieved the same marks as they estimated they would.

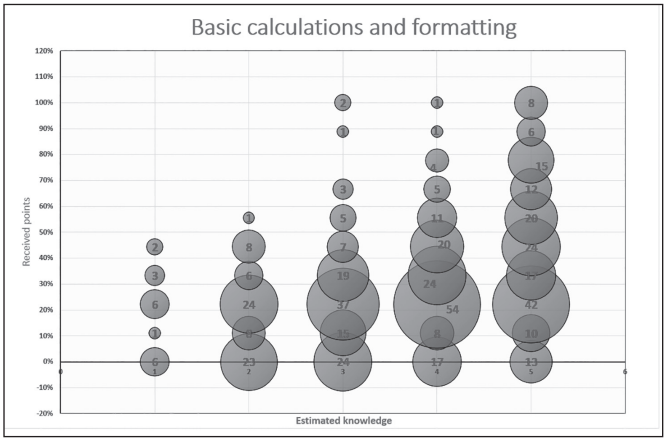

Figure 1: Basic calculations and formatting in the dimension of estimated knowledge and received marks
Source: own composition

If everyone actually possessed the same knowledge they assumed they did, the circles should line up on the diagonal. Since in this question we have uniquely asked about formatting and basic operations, it is incredibly clear that there were barely 18 students out of 513 who self-assessed to a knowledge of level 1, but only 6 of them achieved 0%. Those who assessed themselves to level 2 or 3 should have been able to comfortably solve this problem, but still 23, and 24 students (respectively) achieved 0%. It is surprising to see that there were 30 individuals who rated themselves level 4 or 5, but still showed 0% performance. The biggest circles for any level can be found around 22%, meaning that our students gained 2 out of 9 marks. Out of 513, only 11 students could accomplish 100% on this question, and out of these 8 rated themselves level 5.

If we look at the solutions, we must draw the conclusion that most of our students have opted to solve the easiest, subtraction question. Many have tried setting the border, fill and font style, but in most cases their final results were very far from the requirements and so only a small portion of the marks could be awarded.

Spreadsheet Management 2 focused on basic functions, absolute and relative referencing. The question's relevant material contained a AVERAGE, a MAX and a MIN function and a question focusing on absolute referencing. There were 5 marks in total for this category. As Figure 2 shows, the actual results in this category are closer the the students' self-evaluated knowledge than in the previous one. Alongside the large circles at 0%, there are also big ones around 60%. Most of these students could calculate the functions but could not handle the absolute reference. The row corresponding to 100% also has prominent circles, and we notice that there is one in every column. On this figure, it is easy to differentiate the rows 0%, 60% and 100%, meaning that either the student was not able to solve anything in this category, maybe was successful in drawing up the functions, or handled the whole category perfectly. Like before, we meet some extremes, 3 students who rated themselves as level 1 but achieved 100% and 10 students who rated themselves as level 5 and achieved 0%.

These results further highlight the fact that students' evaluation of themselves differs quite significantly of their actual knowledge. It is important to note, that self-declaration questionnaires may show distorted results as we are prone to over or underestimate our own performance.

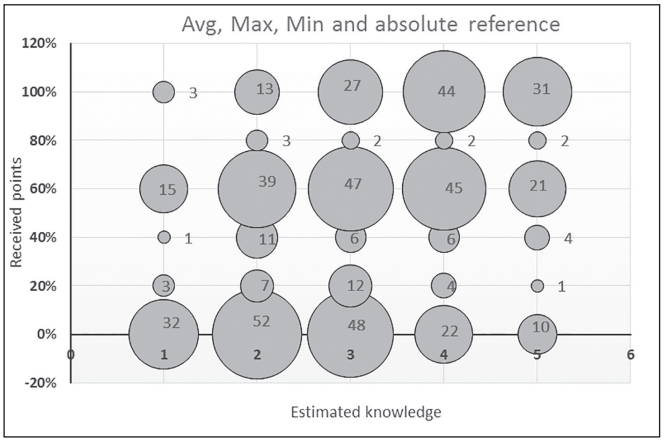

Figure 2: Basic functions and absolute references in the dimension of estimated knowledge and received marks
Source: own composition

Spreadsheet Management 3 of the questionnaire focused on conditional functions, whilst Spreadsheet Management 4 focused on the creation of charts.

In the practical assignment the functions IF and COUNTIF were presented, and a more complex bar diagram had to be made on a separate worksheet with a title, legend and the vertical axis partitioned from 300 to 500 along with the axis titles.

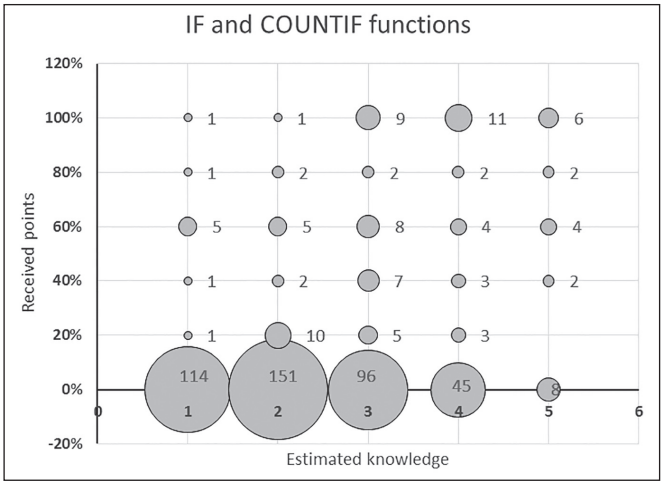

Figure 3: If and Countif functions in the dimension of estimated knowledge and received marks
Source: own composition

We consider these two categories together since we can see from the corresponding Figures 3 and 4 that the students' results are very similar in both cases. For both categories a maximum number of 5 marks culd be achieved. The figures clearly show that very few could solve the questions for these categories. Big circles are only present on the x-axis, meaning that they have achieved 0% on the practical. Apart from one category (IF, COUNTIF, (5, 20%)) there is a couple of students (between 1-14 individuals) who completed the practical in accordance to their self-evaluation. Again, it would have been the most optimal if the circles took place on the diagonal, and so for example students who rated their knowledge level 3 should have achieved around 60%. On these figures it is significantly visible how the estimated knowledge of students is not in accordance with the actual results.

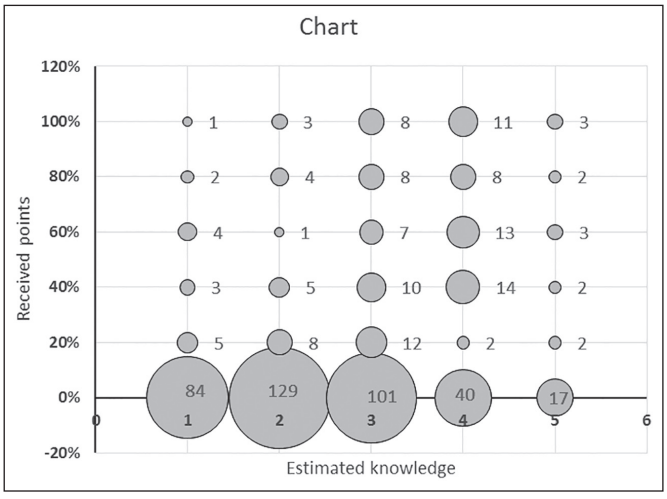

Figure 4: Charts in the dimension of estimated knowledge and received marks
Source: own composition

Spreadsheet Management 5 focused on search functions and nesting functions. A total of 6 marks could be obtained, from which 2 were awarded for successfully putting the ROUND function around an AVERAGE function, and 4 marks for correctly using the pair of INDEX and MATCH.

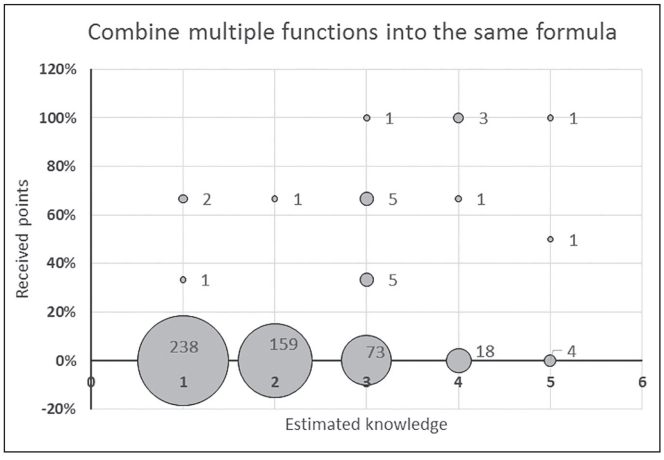

Figure 5: Combining multiple functions in the dimension of estimated knowledge and received marks
Source: own composition

On Figure 5 we can see that only 5 students out of 513 managed to complete this section to 100%. From this, one person rated their knowledge to level 3 and another to level 5, and 3 of them to level 4. 2 students used an auxiliary cell to solve the question on the pair of INDEX and MATCH functions, whilst 3 students managed to get the correct answer without one.

Again, on this figure the biggest circles take place along the x-axis, altogether 492 students achieved 0%, but only less than half thought that they had no knowledge on this category.

Figure 6 contains a summary of all our results.

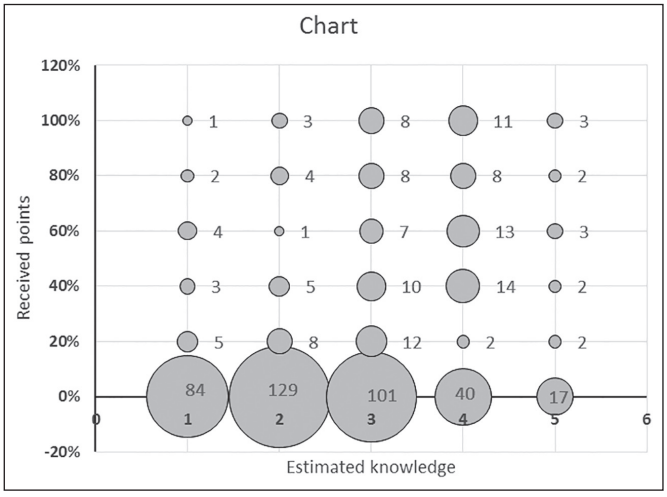

Figure 6: Aggregated results in the dimension of estimated knowledge and received marks
Source: own composition

The average presumed knowledge of our students is shown as a function of their actual results, grouped into categories. Regardless to the estimated knowledge the largest circles are around the x-axis. The most prominent results are made up of the 142 students accomplishing between 0% and 10%. Altogether 434 individuals, that is almost 85% of the students participating in this survey achieved below 40%, from which 260 students were below 20%. To get 40%, 12 marks were necessary, which could have been easily earned by doing the subtractions, formatting problems and correctly using the AVG, MAX, MIN functions. We must note, that there was only one student who completed the practical to 100%, and he estimated his knowledge to (3;4;3;4;3). We found three surveys where the students have estimated their knowledge to level 5 in each category. We have investigated their results, and reached the conclusion that their marks greatly differ. There was a 15%, a 33% two 60% and one 97% solution, the last losing a mark by missing an essential component of a chart.

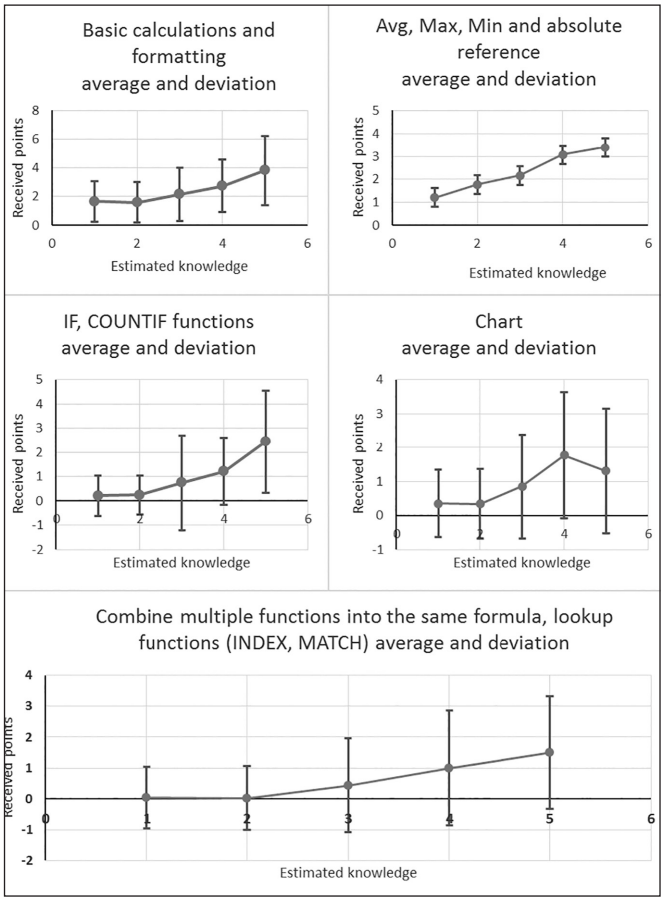

Figure 7: Averages and deviations of the different assignments in the dimension of estimated knowledge and received marks
Source: own composition

On Figure 7 we summarise the means and standard deviations, that is, we calculated what was the actual results and and how large was the standard deviation for every estimated level of knowledge for each category. In the first two, those who estimated themselves to be of level 1 achieved higher results on average. It is interesting to note that their average is slightly higher than those who rated themselves level 2. Furthermore, we see similar results for the charting category, since those who estimated themselves to be level 4 reached higher results (1.77) than those who self-evaluated to level 5 (1.31). The standard deviation is very high in all cases part from the first category of basic functions.

CONCLUSION

In this research, which consisted of a paper based questionnaire and an Excel practical, authors examined the spreadsheet knowledge of first year students at the Faculty of Agricultural and Food Sciences and Environmental Management and the Faculty of Economics and Business of the University of Debrecen in 2018/2019 first semester.

We tried to answer important questions, such as can a student be considered well-versed in computers if they can use their smartphones, play games, chat online, or surf the internet or is it necessary to have high school/university students learn how to operate a spreadsheet?

Our results shows that students have inadequate knowledge about MS Excel, which highlight the relevance that we should teach spreadsheet management for our students. Altogether 434 individuals, that is almost 85% of the students participating in this survey achieved below 40%, from which 260 students were below 20% and 142 students accomplishing between 0% and 10%, which means that almost every third students' knowledge are under the basic.

Our results further highlight the fact that students' evaluation of themselves differs quite significantly of their actual knowledge. It is important to note, that self-declaration questionnaires may show distorted results as we are prone to over or underestimate our own performance. We found similar results in connection with the presumed knowledge comparing with other Hungarian surveys (SÜVEGES and SZABÓ 2013; BAKSA-HASKÓ, 2017).

Besides our results, international researches (OKE, 2004, LEBLANK and GROSSMAN, 2008) also emphasis the importance of spreadsheet management (Microsoft Excel). FORMBY et al., (2017) highlight that students' spreadsheet knowledge is essential in order for the likelihood of success in the job market. Therefore it is important to transfer the knowledge to our students which help them to become productive and economically sustainable members of society.

In order to meet the market expectation and to provide a higher level of teaching our students should be at standard level of high school Computer Science final exam when get into higher education. In order to reach this level of knowledge it is essential to place great emphasis on the students learning at high school level to solve everyday problems and tasks that may arise in other subjects. In this case, in higher education, the knowledge of students could be expanded with additional marketable and competitive knowledge that meets today's expectations. Competitive knowledge can be for example business analytics and big data trends and according to DUMBILL, (2012) MS Excel is still the ubiquitous and popular choice for data analysts.

Examining the 2012 National Curriculum we have found that for high school students' one Informatics class is compulsory per week for two years. During this time, there is 30 hours dedicated to learning the programs in Microsoft Office. Therefore, there is around 16 hours devoted to spreadsheet applications such as Excel. So our students are expected to familiarise themselves with spreadsheet applications through 16 classes, with a class a week so that they are comfortable with a range of functions, financial, statistical, mathematical calculations, and are expected to solve questions on investments and loan related problems. Additionally, they are presumed to be familiar with sorting, filtering and visualisation of data.

To learn, practice and truly deepen this knowledge, so that students gain a lasting knowledge of the subject in 16 hours could only be achieved with an extensive amount of homework. However, the probability that a 16 year old student will spend their limited free time practicing spreadsheet applications is negligible. Naturally, this work could be assigned in the form of graded practicals, but such an amount of homework that

would be needed for acquiring this deep knowledge cannot be made mandatory.

Therefore, an increase in the number of weekly classes from one to at least two would be an effective solution, though for achieving real results a minimum of three classes per week would be needed.

Furthermore, the use of spreadsheet applications could be enhanced by introducing them as a tool for computing calculations, creating statistics and visualising data on figures for other subjects.

Examining the National Curriculum also suggests that the use of computers, or more specifically spreadsheet applications is considered to be essential to the development of scientific competencies. However, looking at high school textbooks we saw that they do not incorporate any information on how to solve problems using spreadsheet applications.

Looking at scientific subjects one by one, we can deduce that spreadsheet applications could be used excellently for the education of Mathematics and Physics. In Mathematics, we use real sets of data to create statistics, and in Physics we deduce approximations from the results of tests and measurements.

Analysing Biology, Geography and Chemistry textbooks we find that spreadsheet applications could be mainly used for summarising data and illustration purposes. In these subjects, we can use real statistical results to demonstrate the magnitude and gravity of existing environmental problems. By letting students process and illustrate the data themselves, they become active participants of the class, rather than staying passive listeners of the teacher's observations.

Last but not least, a differentiated range of tasks and solutions alongside the demonstrated use of the application helps students familiarise themselves with the deep learning required to achieve lasting knowledge in a range of IT tools and programmes.

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SCIENTIFIC PAPER

HOW DIGITAL TECHNOLOGIES ARE CHANGING SPORT?

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Abstract: *Sports is considered to be an outstanding sector of industry all over the world and can be defined in various fields from business point of view: for example competitive sports, recreation, fitness and entertainment (running commentary). All of these areas have been remarkably transformed by digital technology. Over the past three decades, the discipline sport informatics has become a growing discipline. In today's connected world, the use of wearable technology, big data analytics, social media and sensor technology have revolutionized the way sports are played, analyzed and improved. Through various modern advances and apps, pro athletes can gain greater insight into their performance, improve training methods and elevate their skills. In addition to these, fans looking for mobile-friendly apps to give them the latest stats on the favorite players; real-time, behind the scenes content coupled with the instant reaction, from athletes and fellow fans alike. They want the highs, the lows, the remix replays, seeking a connection beyond the game and looking to share the experience with like-minded fans in the moment (WESTON, 2018). The aim of this present study, on the one hand, is to determine the interlocks of sports and information technology, on the other hand, to show how to increase fan experience with digital technologies under-propping them with practical examples. According to international literatures, there are 4 macro areas which show the linking between sport and informatics: athletic performance, sport club, event management, fan experience. Mobil fan experience, augmented (AR) and virtual reality (VR), big data, social media are those technologies which even popular are these days in order to enhance fan experience in sport.*

Keywords: *Sport Informatics, Fan Experience, Mobile Experience, Virtual Reality*.
(JEL Classification: *L83*)

INTRODUCTION

In the last 10 years, computer science has become an important interdisciplinary partner for sport. Applications of computers in sport have been reported as early as the mid-1960's (SYKORA et al. 2015).

In 1975 in Graz a congress was organized by the International Organization for Sports Information (IOSI), where members created and defined the term "sports informatics" (BACA, 2006). According to that, sports informatics covers activities ranging from the most basic to the most complicated ones: from data handling and sensor control with simple tools to how to model and simulate complex phenomena. Interestingly, in the 1970s computers served as information and documentation tools only (LEVY and KATZ 2007), today however, the new methods and applications range has manifolded: virtual reality applications are a daily occurrence in sports commentary, top level sports is backed by VR technologies, in the training process e-learning features and bio-mechanical phenomena with VR modelling and simulations has also become possible as well as many other options (LINK and LAMES 2015).

Modern society experienced an increase in computer systems in almost every aspect in the 1980s. Experts discovered that the use of computer systems enable them to construct a strong system in computer processes and processes of the real world. Computer scientists dug themselves deeper

and deeper into understanding these interactions and therefore applied approaches and methods from behavioral and social sciences, such as sport science (LINK and LAMES 2009).

Computer science has grown to be a widely appreciated science in all fields of research and as a result of this, new research fields have appeared from the cooperation of technical experts and specific domain experts: bio-informatics, neuro-informatics and business informatics as well as sports informatics (LINK and LAMES 2015).

There are endless number of potentials for cooperation between computer and sports science (HÁHNER, 2016; LINK and LAMES 2015; STÖCKL and LAMES 2011):

- Sports scientists can take very good advantage of computer science services in special technological areas, such as data handling and software development for training documentation, controlling sensors, visualizing data, and many more.
- It is important to pay attention to innovation in sports especially in training and competition. With the help of new technologies, sport activities can be supported and it is computer scientists that can help sports experts to become aware of these technological potentials.
- Preferably, computer science approaches and perspectives should apply to the fields of sports science. For instance, soft computing concepts can support the comprehension of phenomena in sports.
- Today it is impossible to run a sports event without exhaustive statistics and an abundance of figures in order to provide fans with information about their favorite teams or athlete real time – that is during the broadcast – on the spot (BODACZ, 2015). Technological development broadens the opportunities of amateur athletes, as well.

As we can see above, sport informatics is a reasonable and fruitful liaison between sport science and computer science. Common projects hold a set of advantages for both disciplines.

In our study we try to answer the following questions that our paper can articulate:

1. In what fields can sports and information technology interlock?
2. How can digital technologies support the increase of fan experience in a sports event or during a live commentary?

MATERIAL AND METHODS

To interpret how computer science has become an important interdisciplinary partner for sport, we relied on international special literature (BACA, 2006; LINK and LAMES 2009; LINK and LAMES 2015; STÖCKL and LAMES 2011; SYKORA et al. 2015).

In the presentation and grouping of the linking between sport and technology we trusted on the one hand international and Hungarian publications and researches, on the other hand we applied a comparative analysis based on secondary databases. With the help of data gained from clubs web sites, reports, case studies we analyzed how information and communication technology plays even bigger role in different part of sport (DE WEAVER, 2016; DE FREMERY, 2018; INTERNET 8, 9, 13, 14, 15, 16; WESTON, 2018; ZSÉDELY, 2016a,b).

RESULT AND DISCUSSION

3.1 The linking between sport and informatics

There are 4 areas which show the linking between sport and informatics:

1. athletic performance,
2. sport club,
3. event management,
4. fan experience.

Following, we would like to present 3 areas briefly and in the next chapter we pan out about fan experience.

1.Athletic performance

This area is probably the most influenced by technology, since in this sector, the search of technologies that could help in the performance has been always carried out. This category focuses on the athletes, their coaches, the technical staff and the strength and conditioning staff. In addition to these, from the analysis of game and trainings performance other possible stakeholder could be the talent scouts, interested in finding new promises (FACCHINI, 2017).

Thanks to the increasing use of IoT (Internet of Things) technologies such as sensors and wearables and analytical tools in sport, different kind of data (athlete and team performance data etc.) have increasingly accessible, traceable, and visible not only for athletes and the coaching stuffs, but for the public as well (DAVENPORT, 2014; XIAO et al., 2018).

The use of accelerometers, gyroscopes, magnetometers, GPS, allow to get data that are very helpful to analyse performances, avoiding spending a lot of time analysing video as before was done. The main advantage of these tools are e.g. they are very small sizes and could be worn by athletes without minimal impediment in the classical activities and movements during the training sessions. (FACCHINI, 2017).

Wearables are even more important to athletes these days. To collect information for analysis, they track everything from the athlete's heart rate to body chemistry. Specialised wearables for boxers, basketball players or volleyball players who do lots of rope jumping during their training help them measure and improve their performance (INTERNET 6).

There are three main application areas of technologies, mainly differentiated by the finality and the aim in the use of them (INTERNET 5; 6):

- performance measurement,
- training,
- health and rehabilitation.

2. Sport club

From the point of this view, the sport club is a common firm, for this reason has been coined the term "sport firm". The most important impact of information technology on

sport organisations is the advancement of physical equipment, hardware and software solutions. The most direct impact is that sports digitalization integrates lots of administrative functions into a comprehensive ICT service with multiple channels such as websites and mobile applications (XIAO et al., 2018). We can see, that with the help of technologies the club can get data various type, the decision making within the club has many more information to considerate.

Digitalization can help club in a different fields:

- infrastructure and security management,
- talent scouting,
- team management,
- sponsorship and supplier management.

Digitalization extends the ecosystem of sport organizations, as new IT stakeholders, such as software providers and data providers. For instance, the success of the German national soccer team in utilizing data analytics in the World Cup tournament was largely supported by software provider SAP (XIAO et al., 2018).

The talent scouting system has also been revolutionized. With the availability of huge amount of statistics created by different sensors wearables and analytical tools, lead that scouting and recruitment of players even more depend on data, instead of intuition and on eyes (STEINBERG, 2015; XIAO et al., 2018).

3. Event management

The events are the main point in sport. The sport club needs to manage a several games, optimizing the value it can create for fans and maximizing the returns they can get from them (FACCHINI, 2017). For sport firms digitalized sport consumption products are great opportunity to deliver their contents and services in customised way (HOYE et al., 2015). Therefore sports consumption products are not limited to only match-day events any more. Digitalization allows sport firms to become connected with the fans all over the world on a daily basis, with the help of different online channels (social media) and can share all organizational processes like training, new signings etc. (XIAO et al., 2018). Consequently all member of the organization from the fans to the president can be part of the distribution of content.

As far as referees, linesmen, umpires and other adjudicators are concerned – systems such as Decision Referral System (DRS), Hawk-Eye, Hot-Spot, Shot-Tracer, Radar Gun and Snick-O-Meter – innovative information technologies can help them to deliver a fair and unbiased experience in the sport (INTERNET 7).

The operations in which this area is subdivided are (INTERNET 4, 5, 9):

- events organization,
- stadiums and facility management,
- cultural promotion,
- referees support.

3.2. Fan experience

One of the most important group in the world of professional sports is its consumer, with other words the masses of spectators at the scene of the events, at home through TV broadcast or supporters on social media. That is the reason why the observation of passive or spectators' sports consumption has won a central role in the interest of international experts concerning the different aspects of sports marketing.

Supporters or fan groups are driven by different motives to watch a sports event live or through TV commentary. Researchers have been looking into motivation behind passive consumption and how this motivation changes in time and space. For example, MADARÁSZ (2018) presented that men are interested in sports events and quality while women are rather interested in show elements and programs related to the sports events. This has been especially interesting after sports became a branch of business and technological innovations became part of the sports world to a great extent. For sports associations and individual sportspeople functioning on professional basis it has been even more important to learn and understand the motivations of different consumption segments. These are certainly crucial because of revenue.

The bases of supporter motivation theories have been derived from previous, not only sports related theories. In the field of sports consumption motivational studies have been extended to consumption through media as well as the purchase of brand products apart from taking part in sports events (FILLIS and MACKAY 2014, FUNK et al. 2002, KAJOS et al. 2017).

In this chapter we would like to present how digital technologies are changing opportunities of fans and how these technologies enhance fan experience.

In the last decades digital technologies are dramatically changing the concept of fan experience. The traditional meaning of "fan experience" was about people enjoying watching matches at the stadium or at least on TV, organizing meetings with friends at game time (FACCHINI, 2017).

These days, clubs and stadiums need to form innovative business models and marketing strategies so as to remain competitive on the pitch and out of it, since an ever-growing generation of supporters grow up in the digital world. For the "digital natives" especially the digital offer of a club will be vital in whether or not they will become supporters and loyal to a club in the long run (INTERNET 1).

Nowadays we can easily access the live performance data, and it is therefore a good opportunity for sport organisations to use this availability for fan engagement (enhancing match-day experience) and commercial purposes (KLUG, 2015). Nowadays even more fans like to be hyper informed about daily news, to be always in touch with the favourite team, to listen impressions and interviews of athletes and coaches, to see how players are performing (INTERNET 3).

Next, we present some of those technology which even popular are these days in order to enhance fan experience in sport.

The mobile fan experience have already arrived in sport. Sports apps are bringing digital into the sports industry

to improve the real-life experience of the game. In 2010, around 18% of searches around big sporting events were from smartphones. In 2016, it was 83% and it's only going in one direction (WESTON, 2018). Many soccer, basketball, and hockey teams have invested into apps for fans (INTERNET 2, INTERNET 13).

Application examples

- In the Hungarian football community DVSC introduced the popular supporters' application Seyu – Together for victory! in their matches. With this DVSC took a pioneering role to widen the match-day experiences of supporters. In Debrecen a great number of supporters use the popular application as Seyu is available on the matches of DVSC women's handball team, too. Supporters encouraged the girls with their pictures in the women's junior handball world championship held in July, too (INTERNET 15).
- Together with Microsoft, Real Madrid developed a mobile app. If we are at the stadium we can watch from different angles, or order food without leaving our seat. On non-game days we can still get personalized stats, purchase merchandise and a lot more. They have proven that an app can interact on a personal level and satisfy our needs by offering special sponsored deals just for us (INTERNET 9).
- Manchester United is betting big on mobile fan experience: apart from the standard app for fans, they have recently released a subscription-based live streaming app. MUTV offers live broadcasts, pre- and post-match commentary from MU's legends, video live streaming from Jose Mourinho press conferences, and more (INTERNET 13).
- FC Barcelona's mobile app provide news, game media, team statistics, game calendar, and more for fans in one place. This sports app also includes a mobile store and takes on the ticketing app duties. The fans are able to order a tour of the team's home stadium, Camp Nou, and Barca's museum (which connects Barcelona's m-commerce and e-commerce platforms). The app also has a clean, intuitive design that's easy on the eye. From 2015, FC Barcelona started out by offering QR-code electronic tickets to their fans via Passbook or PassWallet (INTERNET 14).
- The American Football team, New England Patriots, created 'the Patriots' app' which is one of the most feature-rich sports apps available, delivering on the promise of a new, more modern and affecting fan experience. This mobile app keeps fans informed and engaged in four vast sections: (1) News & Media, where fans can read the latest news and articles on their team; watch various videos and listen to team-related podcasts; and thumb through different photo galleries. (2) Season and Team deal with team statistics: game schedule, team standings, team statistics and all other numbers can be found here. (3) Game-day and Cheerleaders. Here we can find live chat, game center, and game highlights while the second is similar to team section, only smaller. (4) The Fanzone is the biggest sections: it includes everything from mobile store and sticker keyboard to wallpapers and instant feedback form (INTERNET 13).
- The hockey team, Grand Rapids Griffins' app covers all the essentials: team roster and game schedule; game media and news; tickets and mobile store. Griffins' sports app successfully captures hockey's power to entertain, delivering an engaging and rewarding fan experience that is in line with hockey aesthetic, as well as properly leverages gamification and the latest tech. There is a Photocard section in the app as well, where fans can take a photo in a present frame to become a Griffins' player, stand alongside the team's mascot (INTERNET 14).
- The NBA has embraced mobile technology in recent years, aiming to provide a personalized mobile fan experience. Apps provide convenient real-time information about open parking spaces to streamline fans' arrival at the game. With the help of this app, fans have increasingly been using mobile tickets to enter the stadium. In order to providing better security for the arena and easier transfer or resale options for fans, these apps also allow basketball enthusiasts to buy food, drinks and merchandise once inside the stadium. Some apps even give real-time information on bathroom and food service lines, making it even easier to enjoy the experience without any inconveniences (DE FREMERY, 2018).

Up to recently, coaches applied video footage to prepare for matches and train their players. They studied athletic performance from a few aspects, now, however, Virtual reality (VR) has widened the possibility of these aspects immensely, because it can visualize games with virtual fields, therefore games can be played on screen before they actually happen.

3D simulators enable players to choose from a number of tactical options and try their strategies multiple times against the opponents. The simulation is so sophisticated that it can create the same emotional pressure that an athlete goes through during a tournament. They can even experience the sensation of a jump that they have never tried beforehand (INTERNET 6).

Whether it is about developing player performance or giving fans a better viewing experience, Virtual Reality is always an excellent tool both on and off the field. It gets supporters closer to the game both on the scene and in front of the monitors at home. FOX Sports in joint venture with NextVR have broadcast live sporting events applying VR technology, winning such success that they were able to sell tickets on peak prices. It is probably the best proof that VR technology contributes and will contribute to the involvement in the future (INTERNET 3).

Augmented reality (AR) is a further step in technology: it projects a layer of information on the visible performance of a player supported by smart algorithms. In the future this could add extra knowledge to the field player with live information telling about the opponent's possible next move having observed his previous game data (INTERNET 6).

Various Virtual Reality companies can proudly name different NFL, NBA, NHL, NASCAR, MLB and college sport franchises, as well as media organizations as their clients. All those franchises have been "sold" on the idea of Virtual Reality as a new tool to improve their results

(INTERNET 10).

Application examples

- In 2017, for the first time, BT Sport streamed the Champions League final live in 360 VR on YouTube and BT Sports apps. This was a unique experience for the fans, bringing them closer to the action than ever before. Fans could choose their own view of the final, direct from mobile (or VR headset), giving them access to live footage which was not available on the TV (INTERNET 8).
- The Minnesota Vikings have upgraded the old-fashioned sports museum experience into something more exciting and high tech. 10 000 square feet of a trip through history in VR couldn't be more fan interacting and interesting (INTERNET 9).
- In September 2017 the Major League Baseball has launched an AR app MLB at Bat. The user just needs to point the mobile device towards the field and on the screen, he/she will see all player's statistics. Moreover, the information about the speed and the trajectory of every hit will also be given (INTERNET 11).
- The basketball team of FC Barcelona have run several tests with Google Glass technology: snapshots have been made both in the highly prestigious European cup series (Euroleague) matches and the trainings and later these various "viewpoints" where shared with the fans. Thanks to this innovation, supporters now have the chance to observe matches from the angle of their favourite player or may take a seat on the bench of their favourite team and can follow the play from the coach's eyesight simultaneously with the real time statistics of the match and the players (INTERNET 1).

The presence of social media has had a huge influence on every aspect of our lives in the past ten years, and sports is no exception either. Social media has altered the interaction between sorters, clubs and supporters greatly. Today a tight connection between sports events and social media is undoubted. Most teams, championships or sports associations run at least one media profile (Twitter, Facebook, Instagram, Youtube etc.) where they inform their fans and announce all important information. During any large-scale sports event we can find a number of references on the timeliness of the programs on these interface. Basically all sports events have so-called hashtags (e.g. #finabudapest2017, #avizosszekot), which create a meeting point and a quick way to interact for the viewers. Sportspeople use social media for self-marketing, communication with supporters, any announcements and advertising brands, taking advantage of the fact that they might have up to millions of followers. For supporters, social media provides a unique chance to trace results, communicate with other supporters or contact their favourite sportsmen, which would not have been possible a few years ago. Mobile technology gave an even greater impetus to the use of social interface and made it possible for more and more people to access contents independent of place (INTERNET 16).

By employing social media ever more intensively, clubs and players can target supporters, who cannot be achieved by strategies currently applied in social media.

Social networks such as Facebook, Twitter, Snapchat and WeChat have played a key role in this change that fans don't have to go to a game or rely on linear TV broadcasts to follow the action (INTERNET 8).

Facebook has indicated that there are more than 500 million soccer fans on the platform, many of whom will follow the top teams in the Premier League and LaLiga, but few of whom will ever be able to watch a game live in the stadium (INTERNET 8).

Application examples

- Online real time commentaries provide excellent opportunities for football supporters to interact on social interface. The sights of clubs on social media interface have become one of the most popular ways of searching for information on their team (results, events, news). Social network also gives the best opportunities for them to get closer to their favourite players, stars and to get more and personal information about them. These social sights feature quite a few exclusive data only accessible on these pages, e.g. short videos of matches, interviews, and trainings. On various forums they can discuss the performance and development of a team or a certain athletes with supporters of similar interest. One of the most significant advantage of social interface is that it is able to forward information to the target group incredibly quickly, therefore sportspeople and clubs like to use it for their sports campaign (INTERNET 1; INTERNET 3).
- Real Madrid has 104.7 million, FC Barcelona 102.8 million, Machester United 73.7 million fans on Facebook. One of the most popular athletes is Christiano Ronaldo who has 54.5 million followers on Twitter and 82.9 million on Istagram. Lebron James has 37 million follower on Twitter and 62.6 on Instagram (INTERNET 16).
- The NBA has a Facebook Messenger chatbot that can show highlights of specific players and top plays, delivering clips of the action in real time. Using new technology developed by Israeli startup WSC, the NBA can even automatically generate custom clips for certain types of plays and players (DE FREMERY, 2018).

Big data is a term that has been thrown around marketing and business circles over the last ten years. We can interpret big data as the massive volumes of 'data sets', found outside the firewall of any brand, sporting team or organization. These data sets are often very large, so while collecting them and making sense out of them makes sense, gleaning useful insights can be very challenging (DE WEAVER, 2016).

Among other industries, sport marketing takes advantage of big data on a daily basis. Top athletes or celebrities are keenly invited to promote brands as a method in sports marketing. Big data provides target consumers with information on their favourite players, or teams or the certain sports event they are looking for. A good example is a sports memorabilia store selling Atlanta Falcons gear in and around the city of Atlanta,

where – with the help of big data storage – it is easy to find the supporters of the team, and the company can reach them to advertise their products or forward information on the team. Knowing the customers of this shop, it is even possible to find extra information on their shopping habits and interests: who are the most popular players among them. When it turns out, the company can make an agreement with that certain player to advertise their goods and wear the logo or name of their brand on their garment in matches (INTERNET 12).

There are two technologies concerning data that have a serious impact on sports industry: data analytics and the internet of things. The former gives way to professional sports organizations to observe and examine a vast amount of data that has been gathered by so-called special field cameras fixed to players' shoulder pads. With the help of these data analyses the doors open up for players' skill sets, discover yet aside talents, focus on team weaknesses to be developed and choosing the right starting players for kick-off in support of team victory. Lots of other potentials are present in these data analyses that is new research will be done in new fields.

The other data-technology is Internet of Things. This technology is able to collect and analyze data that are withdrawn from an incredible number of network-enabled devices.

Live cams on helmets afford coaches a bird's eye view of the game and wearable devices record players vitals and monitor them over time. Also, mechanisms are being installed in basketballs and soccer balls measure and record precise shooting and passing accuracy and to measure impact, spin and trajectory respectively (INTERNET 4).

Application examples

- In 2016 Amaury Sport Organisation (ASO) responsible for organizing the Tour de France in cooperation with Dimension Data information technology firm set up an online platform which offered special contents for the secondary monitor that is for mobile phones, tablets or computers to complement TV broadcasts. Race Centre is an online application that is stored in a Dimension Data cloud and was created in cooperation with ASO. Apart from the Tour de France live race data, extra videos, photos, commentary and social media news streams not included in the TV broadcast were also available on the platform. In addition to that, a "Live Tracking" page was launched for the time of Tour de France, where data on all the 198 racers of the 22 teams was available real time: their speed, the distance between them, the wind direction, the wind speed, or the weather conditions (ZSÉDELY, 2016a).
- In 2016 Microsoft became the official technological partner of LaLiga operating the two highest divisions (Primera División és Segunda División) of Spanish football. The artificial intelligence supports the work of LaLiga on several points. Firstly, the system helps calculate the viewer number expectancy regarding every match-day, secondly, it aims to serve the online content demands of supporters. To boost supporter interaction chatbots based on artificial intelligence have been introduced which ask questions from the users appropriate to the environment of the discourse in the online communication and give actual answers from the data in their databank. Moreover, player specific info-graphics are created from real time match data, and complex statistics are at hand to be browsed. To improve the digital experience of supporters, technologies of gamification are also used. For example, users can take part in online challenges, games, where they can collect points and virtual money redeemable to exclusive contents or gifts (ZSÉDELY, 2016b).
- US Sailing ran a session entitled 'SAP Sailing Technology Partnership' which was fascinating to attend. It clearly illustrated the importance of big data while competing in boat racing. SAP also identified customer and boating solutions to help: (1) Regatta organizations – simplifying the running of races and regatta's; (2) Sailors – to help analyse performance and to optimise real-time strategies for tides, winds, competition and more; (3) Fans and Spectators – to give global access and provide greater understanding of racing; (4) Media and Commentators to provide accurate, real-time and insightful analysis (DE WEAVER, 2016).

CONCLUSION

Computer science in sport is a well-established research and development field. The unique combination of sport science and informatics with the large application field of sports at any level provides great perspectives (LINK and LAMES 2015).

Our conceptual paper deals with the immersion of information technology's impact on sports, and we tried to present it as many aspect as possible. The main purpose of this article was to introduce the latest technologies in connection with fan experience throughout practical examples.

According to the four main areas, we have reviewed the latest trends linking between sport industry and informatics. Administration of sports, live broadcasting, business intelligent and analytics, mobile applications and social media are increasingly utilized in sport organizations. The huge amount of data generated by different digital means (wearables, sensors, analytical tools, cameras etc.) have increasingly accessible, traceable, and visible for all members of the sport organizations and for the sport fans as well. The importance of using data analytics is essential to improve the performance of athletes, teams and clubs. Consequently, using information technology creates competitive advantages for the sport organizations.

The most important group in the world of professional sports is its consumer. Digitalization have revolutionized the sport consumption and the supporter motivation behavior. Nowadays even more fans like to be hyper informed about daily news, to be always in touch with the favorite team, to

listen impressions and interviews of athletes and coaches, to see how players are performing, in other words: stay connected.

Mobile technology enable fans to access relevant content, share their experiences on different social media sites during the event, and to get more customized experience.

All in all, we tried to show that researches in sportinformatics should not to be limited only for sport analytics, because digitalization has a great impact on all fields and members of the sport industry.

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SCIENTIFIC PAPER

THE OPINION OF VISITORS ON THE TOURISTIC ATTRACTIONS AND SERVICES OF THE ESTERHAZY CASTLE OF FERTŐD

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Abstract: *The lately renovated Esterhazy Palace is one of Europe's biggest Baroque palaces. This paper examines the visitors' opinion of this worldwide famous palace. This survey-based study was carried out in 2016/2017. The sample was of 800 people, using paper-based questionnaire. It emerged from the study that the visitors needed to be separated analyzed differently under and above 18 years of age, because the push and pull factors vary significantly. Other words, the adult visitors (persons, families) decided themselves to go and see or not, but the young people were influenced by their teachers. Other important lessons of the study was that the visiting process does not end with the viewing of rooms and tools, but the different souvenirs and providing further information, and services are also part of it. This is evidenced by the fact that the worst rating was given by the related service. Organizing and ensuring this is an important task of the management of the palace.*

Keywords: *Cultural Heritage Tourism, Management, Esterházy Palace Fertőd, Visitor Survey*.
(JEL Classification: *M3. O18, Z32*)

INTRODUCTION

The lately renovated Esterhazy Palace of Fertőd is one of the biggest Baroque-Rococo palaces of Europe. The objective of this research was to get to know the visitors' opinion about the cultural attractions and services of the Esterházy Palace. This paper examines the visitors' opinion of this worldwide famous palace.

The palaces have a double function embedded in the touristic system of the destination, following the logic of competence marketing. They are a special part of the offer and have a close connection to communication activity. With a function restoring and expanding renovation they can become unique attractions, which are by themselves capable of attracting tourists to the region. In addition, because of their special infrastructures, they can become service locations, such as accommodation, catering unit, event location or part of the program offer. Beside their autonomous presence they are the foundation of thematic products and offer packages in the regional network (KULCSÁR et al., 2017). In other words, a touristic destination is not „left hanging in the air", but lives with its environment and region, it's not separated, but an organic part of the regional processes. It is very important for the tourism management that the Esterhazy Palace as a touristic product be seen in unit with the touristic processes of the region (BODROGAI et al, 2016). Beside the reinforcing of local identity, it has a big influence in communication marketing, that is they promote the notoriety and reputation of the region.

MATERIALS AND METHODS

Materials

Cultural tourism has been typified in many dimensions in the secondary literature, CROUCH (2009) for example distinguished the nature of cultural tourism towards the „high or intellectual" cultural attractions from the so called „mass or popular" cultural tourism. The numerous approaches generated a widely spread discussion about tourism and the marketing connected to it. The perhaps strongest stream of criticism has unfolded between the so called classical and postmodern points of view. According to the postmodern position, the previous stream of the cultural tourism produced the so called „staring at it, but not seeing it" phenomenon, in other words the „Kodakization" of cultural tourism, which concentrates on the preservation of cultural values on photographs. The critics of this theory mention, in relation to the postmodern approach, the relativization of values, during which each person decides for themselves what they think of as important, interesting and the reasons why. The postmodern cultural tourism exceeds the so-called theories of representational tourism, edging towards everyday life (WEAVER, 2011). STYLIANOU-LAMBERT (2011) emphasizes this positive trait, according to which the postmodern trends prefer the subjective approach and methods, and so the subjective experiencing (STYLIANOU-LAMBERT, 2011). The heritage tourism is closer to the classical point of view, which gives a special importance to the identity reinforcing effect of touristic experience. MILLAR (1989) defined the functions of heritage tourism as following: touristic attractions and representations, formal and informal education, reinforcing the collective and national identity, economic success (MILLAR, 1989). According to his opinion, in case of the tourism in sync with the classical point of view all functions could come true more effectively than following the logic of the postmodern tendencies.

One of the central dilemmas of the cultural heritage tourism is the conflict between „Art for art" and „Art for business" (SETYAGUNG et al., 2013). This is probably the most important, but also the most difficult task for the heritage management. SETYAGUNG and his coworkers offer a possible answer to this opposition, to the lifting of artistic and business-like approach with the model based on the so called „Triple Helix" paradigm (Figure 1) (SETYAGUNG et al., 2013).

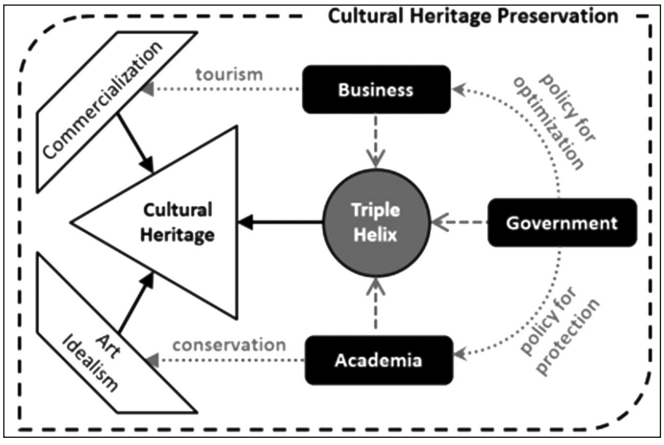


Figure 1: The „Triple-Helix" model and the commercial and artistic activity in cultural heritage protection
Source: SETYAGUNG et al., 2013

The disintegration of balance forecasts damage in the cultural or nature conservation area of heritage protection (for example, if the dominance of the business approach is strong and politics does not restrict it) (FAGANEL, TRNAVCEVIC, 2012). At the same time the model shows us the possible damaging effects, when the cultural heritage closes up in an ivory tower from the surrounding economic, social and ecological system.

The heritage tourism management can choose between three theorical models of the value orientation which will characterize its activity (DELLA CORTE et al., 2009). The traditional model concentrates on the preservation of heritage values and its primarily tasks are the diffusion of the knowledge related to it. The consumer-oriented model focuses on the social status and desires of the consumer and concentrates accordingly on the technological aspects, de-emphasizing the historical, archeological and cultural aspects. In the center of the third model is the value assimilation, during which the visitor takes an active part in the process. According to the authors (and the social trends) this third model will become more and more emphasized in the future in area of heritage management. The economical profit of cultural heritage is not equivalent to the produced financial profits; the social profit of cultural heritage can exceed the financial profit by many times (RUIJGROK, 2006).

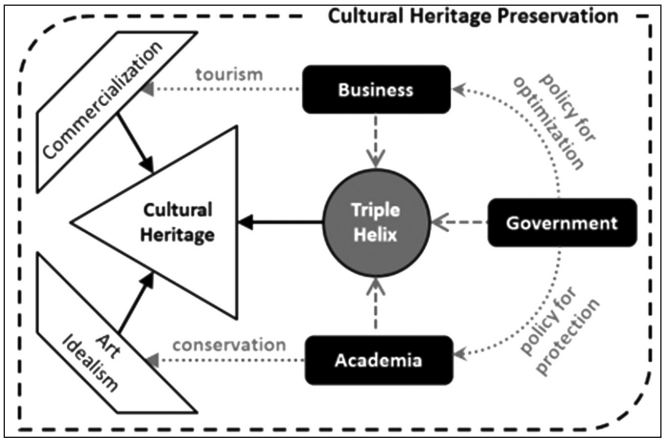
The characteristics of the visitors of cultural heritage values (e.g. motivation, needs and expectations, previous experiences, qualification, price sensitivity) define fundamentally the possible direction of the development and management of values. The secondary literature has many existing typifications, which put mostly the motivation at the center of study (PETR, 2015). SHENG and CHEN (2012), based on the completed factor analysis, distinguish between visitors 1) who desire curiosities and light entertainment, 2) who desire cultural entertainment, 3) who want to gain reinforcement in the cultural aspect and historical identity of their personalities, and 4) those who want to reinforce their dreams and visions (SHENG, CHEN, 2012). NIEMCZYK (2013), examining the consciousness of visitors, hypothesizes five basic visitor types: 1) conscious visitor, who chooses to visit the institution based on a rational decision, 2) the visitor who disposes of relative (e.g. artistic) abilities, 3) the sightseer, who visits monuments, 4) the accidentally entering, and 5) the occasional, casual visitor (NIEMCZYK, 2013). According to NIEMCZYK (2013), the group of visitors can differ significantly depending on how much importance they give to culture in their choices, i.e. in what measure the cultural values motivate their choice as visitors. On the other side, how open they are to the reception of cultural experiences, i.e. in what measure they experience the values channeled by the attraction in question. The segmentation based on this of channeled values and visitors defines in the optimal case the activity of the management. This activity has to be based on a marketing conception that counts consciously with the different value systems and attitudes of visitor groups and, in the case of the Esterhazy Palace, with the multilayer approach to the touristic destination. The conceptional model of the

marketing activity of the Esterhazy Palace is shown in Figure 2. The model counts with two fundamental visitor types.

The onefold visitor has curiosity mostly for the palace and the tangible elements of the connected cultural heritage values (e.g. buildings, furniture etc.). His curiosity is satisfied by the visualization of this in form of an attraction. The onefold visitor who during the guided tour takes a lot of photographs when possible but will probably not return.

The other type is more profoundly interested in the cultural attraction. His positive attitude and emotional connectional is paired with trust and commitment. This returning visitor has stronger cultural roots and interest, someone who desires a more intensive experience and is a regular consumer of the higher cultural attractions.

Figure 2: The conceptual model of the marketing activities of the Palace



Source: ROSE et al., 2016; BODROGAI et al., 2017.

In practice the classification of tourists based on the model above is not an easy task.

Methods

The paper sums up the results of a quantitative primer study. The survey about their impressions and opinions was filled out by 800 visitors of the palace in the years 2016 and 2017 before they lef. The survey was processed by IBM SPSS program. The visitors can be divided in two fundamental groups: on one side the young people (students of elementary, middle and high school) who come on organized trips to the Palace as complementary part of the school program, on the other side the adult visitors and families who come by car or bus from the different parts of the country or are staying in the vicinity, as well as those who stop on their way to Austria to visit the Palace.

The essence of the different motivations of the two groups will be described in the following. From the point of view of the marketing research we separated the young people (maximum 18 years of age) from the adult visitors, because we supposed, rightly in most cases, that most of these young people was group visitors, i.e. school students of different levels. In these cases, the goal and the motivation of the visit depends greatly on the interests and orientation of the accompanying teachers and on the opinion of the school board. From a different approach to the topic, the students get a ready-made orientation, the marketing activity of the palace does not (or in very little measure) affect them directly. Of similar experience report PESARO and RUBEGNI (2010). They also raised the question of the different motivation between younger and older people.

From a methodological point of view, it was important to form two groups by the analysis of the visitor surveys, one of the adults and the other of the young people (students).

RESULTS AND DISCUSSION

About the social composition of visitors and the opinion about the programs of the palace

In Europe one of the most important motivations of the touristic mobility is culture. Although the participants of cultural tourism have heterogenous characteristics, we can say that in general these cultural tourists are relatively high educated, have an income exceeding the average, and the proportion of women is a little over the average. The data recovered from a study about the knowledge and attitude of the Hungarian population about cultural tourism (MAGYAR TURIZMUS ZRT., 2008) confirms this correlation. According to the results of the MAGYAR TURIZMUS ZRT. (2008), those who have had a higher education and belong to the group of people with higher income are the ones mostly interested in cultural tourism.

In terms of age, it is possible to find both older and younger generations, but there is a difference in their interests: the older people are more interested in the cultural heritage attractions, while the younger ones are more attracted by the events and popular culture. LIN (2006) gets to similar conclusions: he experienced in the greatest proportion of lack of interest for cultural museums among people with lower education and income. What overlaps with other European experiences are the expectations of these social groups from the museums: spending of free time and meeting with popular culture.

Young people in the Esterhazy Palace

The average age of young people is 12.5 years, which justifies the decision to separate the sample in two groups. It is visible that this is the age of students in middle school. The proportion of older, but still young visitors was 25.3%.

21.6% of young visitors have already visited the palace, but for the majority of them it was the first time. The major source of information for these young people is supposed to be educational institution. Other than the schools, according to the answers mostly the Internet (54.1%) and the mass-communication devices were nominated as source (31.9%). In a proportion that is worth mentioning are friends and acquaintances as source of information (15.0%).

93.0% of the young people participated in a guided tour. In this a significant circumstance was the fact that they belonged

to a visitor group (school group), where the participation on a guided tour was mandatory.

The satisfaction of visitors was measured by asking about the opinions according to a few points of view. Table 1 shows the satisfaction data on a five-point Likert scale. 1 means "I am not satisfied at all" and 5 means "I am totally satisfied".

Table 1: Satisfaction levels among young visitors

Point of view	Satisfaction level, %					Average	St. dev.
	(1)	(2)	(3)	(4)	(5)		
Completion of expectation about the Palace	4.6	5.6	16.8	37.5	35.5	3.94	1.07
Impression about the Palace complex	3.1	5.6	22.7	33.7	34.9	3.92	1.03
Impression about the coworkers	4.3	4.1	19.7	39.9	32.0	3.91	1.03
Guided tour	5.8	4.5	17.4	42.4	29.8	3.88	1.07
Offer of the souvenir shop	8.0	15.8	26.4	24.5	25.3	3.43	1.24

The young visitors were best satisfied with the correspondence to their expectations. The measured differences between the averages of satisfaction levels were minimal in most cases. They were mostly critical about the offer of the souvenir shops and the guided tour. By the judging of the souvenir shop we experienced the biggest dispersion of opinions, i.e. the least unitary judgment. It can be observed that the average of satisfaction level never reached the 4.0 threshold. About one third of young visitors can be characterized by maximum satisfaction level.

Some things should be changed according to the opinion of young visitors, to optimize the level of satisfaction. Most mentioned were the following:

- Expanding the offer of the souvenir shop
- The prices of the souvenir shop are high
- Show more rooms
- Possibility to get closer to the objects
- Possibility of Baroque photoshoot
- Lower the load/burden of the lady in the cafeteria
- Benches in the garden
- Child-friendly guided tours
- Free Wi-Fi
- Stops for rest on guided tours

The management of the Esterhazy Palace must take into consideration the opinions about satisfaction, because the impressions in the younger visitors can take effect on the visiting of later generations, but also on the people in their social nets. Despite the critical opinions 91.2% of the younger people would suggest the palace to their friends and acquaintances. This number is very high, even if these intentions get lower later. Most young people would like to visit further attractions of the palace complex, for example the Orange House, the Marionette Theater, the Water Tower, the Rose Garden, the Les Forest and the Haydn Chamber.

Adult visitors in the Esterhazy Palace

In the following we will be presenting the opinions of the adult visitors. We have already explained the division of the visitors into two groups. The distribution of visitors by sex is close. The proportion of male visitors is 50.5%, that of women is 49.5%. For more than half the palace was not a novelty (51.9%). This number suggests that visitors can be divided in different groups, as mentioned above by the typification of visitors. Who has visited the castle multiple times is probably more profoundly interested in cultural values.

We asked adult visitors on the questionnaire what kind of sources heard about Palace from. 45.8% of adult visitors mentioned that they heard about the Esterhazy Palace via Internet. This information device got the most mentions. Now look at the proportions in which the information sources got mentions (one responder could nominate more sources) (Table 2).

Table 2: Information sources about Esterhazy Palace, %

Categories of answer	Distribution of answers
Internet	45.8
Mass communication	43.2
Associations of Hungarian Touristic Destination Management	20.8
Friends, acquaintances	17.3
Tour-inform	8.6
Event organizers	7.0
Facebook	6.3
Travel agency	5.6
Accommodation	5.6
Advertisements	3.3

This sequence is very instructive. It shows that the internet and the mass communication are very efficient in spreading the information. This kind of active demand, where the palace gives information (internet, mass communication), but plays an otherwise passive role (pull) is widely accepted and practiced marketing approach (BODROGAI et al., 2017). Contrary to when the palace actively puts pressure on spreading the information and increasing the number of visitors („pull") looks less efficient (event organizer and different agencies). The right conclusion is naturally not using the latter, but to make an effort to increase their efficiency. In case of the Esterhazy Palace the „pull" factors will always have a more significant role to increase the number of visitors. 94.1% of the adult visitors have participated in a guided tour, and this circumstance could also increase the possibility of application of the pressure marketing.

The analysis of the satisfaction level of adult visitors has been carried out with the above described methodology. The dimensions of satisfaction were the same. The results can be seen in Table 3.

Table 3: Satisfaction levels among older visitors

Point of view	Satisfaction level, %					Average	St. dev.
	(1)	(2)	(3)	(4)	(5)		
Impression about the coworkers	4.6	3.4	15.4	46.7	29.9	3.94	0.99
Guided tour	4.3	5.5	14.5	45.5	30.2	3.92	1.02
Impression about the Palace complex	4.3	5.1	20.2	43.6	26.7	3.83	1.02
Completion of expectation about the Palace	4.6	5.0	19.9	45.5	24.9	3.81	1.02
Offer of the souvenir shop	7.0	13.8	31.6	30.7	16.9	3.37	1.12

In the case of the older visitors the souvenir shop got the most critical evaluation, but here the opinions were the least unitary. Compared to the other points of view and to the valuation of the younger visitors their impressions about the Palace are more negative. The opinions were the most united by the judging of the coworkers, and also the most positive. The average of the valuations is in every case under the 4.0 threshold.

The management must also pay attention to the fact that the souvenir shop got the worst valuation in both visitor groups. The souvenir shop, as described by FIGUEIREDO et al. (2015), is not only a market institution, but contributes to the reinforcement of identity and to the spreading of the perception of sustainability. Because of this, the results of this study make a more detailed exploration and measures needed.

The visitors, not only concerning the souvenir shop, suggest the following changes for the management of the Palace:

- More and better directional signs
- Solve the parking problems/issues
- Keep to the preannounced times of the guided tours
- Expanding the offer of the souvenir shop
- Politer attitude of the staff
- The staff should not talk about personal problems in front of visitors

In opposition to the relatively low-key valuations 92.8% of the visitors would suggest visiting the Palace. The majority (67.5%) would also visit the attractions not present in the program (Rose Garden, Marionett Theater, Orange House, Water Tower).

SUMMARY

In summary, we can highlight that identifying the visitor groups of the cultural destination and the realization of the segmented marketing work is very important. Much of the literature agree with this differentiated marketing approach and the re-evaluation of the work of the management according to this. Similarly, the management must put the approach at the center, according to which the cultural touristic institution needs to be positioned in a unified view with its environment. A significant cultural institution and the network of touristic, service, etc. relations of the region could free up serious synergy for the development of the region too.

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SCIENTIFIC PAPER

EFFECT OF QUALITY ASSURANCE DEFICIT ON MARKET COMPETITIVENESS FOR EXPORT COMMODITIES AND HOUSEHOLD INCOME IN NIGERIA

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Abstract: *The Nigerian's agricultural sub-sector contributes about 37 percent of her Gross Domestic Product (GDP) and employs about 65 per cent of the adult labour force. It is thus the major source of food and fibre for the nation. However, there are increasing concerns about the quality and level of safety of many of the agricultural export commodities, particularly in the European markets due to the composition of high level of unauthorized pesticides. This is a major challenge to the level of market competitiveness for these commodities in the international markets. This study therefore examined the effect of quality assurance deficit on market competitiveness and household income levels. Trends in Nigeria's agricultural export trade between 1980 and 2014 were examined and emphasis was placed on cowpea, dried maize, melon seeds and palm oil. Descriptive and qualitative statistical methods were used to analyze the data. Quantitative statistics included the use of econometric models. Results indicated that there was an increase in the general price level of the commodities at the international market over time. The aggregate market demand for each of them dropped sharply in the last one decade even when the market price per unit increased steadily. This negatively affected the households' average income level as returns on sales of export commodities declined. Huge quantities of the commodities were then forced to be sold at the local markets at cheaper prices. This development negatively affects the consumptions patterns of the exporters as they now have reduced disposable income. Appropriate agencies of government need to be awake to their responsibilities of assessing and certifying the quality of the Nigerian agricultural commodities before exporting them abroad. This will help to further boost the level of consumer confidence in these export commodities especially at the international markets.*

Keywords: *Agricultural Export Commodities,Household Income, Market Competitiveness, Quality Assurance Deficit.*
(JEL Classification: *Q13*)

INTRODUCTION

Nigeria's agricultural sub-sector is the largest contributor (88%) to the non-oil foreign exchange earnings. Development in the sub-sector is therefore capable of bringing about a broad-based economic growth that is characterized by increased per capita income, reduction in poverty and expansion of employment opportunities. Some of the major agricultural export commodities are cotton,maize, groundnut, hides and skin, beniseed,cocoa,palm produce,rubber and timber, among others(Olukosi and Isitor,1990;NBS,2002;NBS,2009). To compliment local supply, Nigeria imports poultry products (such as chicken and turkey) and processed foods mostly from European countries. Other food imports include canned beef and frozen fish (such as tilapia, mackerel, bonga and stock fish), wheat and fruits and canned juice among others. Huge quantities of these commodities however find their ways into the Nigerian markets through illegal (unofficial) channels. Hence they are often regarded as part of Nigeria's unorthodox trading activities since they do not enter the official transactions of the government. International trading is necessary in order to balance the trade position with Nigeria's trading partners. However, there are increasing concerns on the level of safety of these export and import commodities. For example, just recently, the Nigerian government started enforcing the ban on imported poultry products and frozen fish before they find their ways into the domestic market. This decision was premised on the claims by the Nigeria's Ministry of Agriculture

that a large proportion of these imported commodities harbor harmful parasites,bacteria,viruses,chemicals or radioactive substances. In a similar vein, the European Union recently suspended some agricultural food exports from Nigeria. These food items include beans (cowpeas), sesame seeds, melon seeds, dried fish and meat, peanut chips and palm oil. Reasons for the suspension are hinged on the allegations that the items constitute danger to human health because they contain a high level of unauthorized pesticide. For instance, the European Food Safety Authority observed that the beans from Nigeria contain between 0.03mg per kilogramme to 4.6 mg per kilogramme of dichlorovos pesticides when the acceptable maximum residue limit is 0.01mg/kg.

Again, in 2013, about 24 of the Nigerian agricultural export commodities were rejected from the United Kingdom and the number increased to 42 food products in 2014.Some of these items were said to have been contaminated by aflatoxins. This makes them unfit for human and animal consumption. The health risk that is associated with the consumption of the imported commodities is further heightened due to the relative market competitiveness and preference they enjoy among Nigerian consumers most of whom care less about the chemical composition and possible health implications (such as cancer, skin irritations, internal organs defect and migraine headaches).These imported food products are ironically cheaper than the locally produced food items; thus putting the latter into some market demand risks and uncertainties. This development has remained a source of worry and concern to the local producers of these food products hence they have often called on the Nigerian government to properly address the situation by reversing the ugly trends.

1.1 Literature Review and Theoretical Framework

Before the discovery of crude oil in commercial quantities in Nigeria, the agricultural sub-sector was the chief foreign exchange earner constituting between 65 -70 per cent of the Gross Domestic Product (GDP) (Olayemi,1980 and Adeyokunnu,1980;CBN,2006).Some of the major agricultural export commodities include cowpeas, sesame seeds, melon seeds, dried meat and fish, peanut chips,palm produce (kernel and oil),kolanut,cashew nuts and foodgrains (such as millet, maize and sorghum),among others (Olukosi and Isitor,1990;Adekanye,1988; Helleiner,1988; CBN,2006 and NBS,2009). According to Adeyokunnu (1980) and Olatunbosun and Olayide (1980), the marketing of agricultural export crops and the marketing board system dominated the business space in the early period of the nation's post- independence in 1960. The basic intention of the government then was to stabilize producer prices, conduct market research and development and to accumulate the trading surpluses. Between 1955 and 1951,the marketing boards accumulated reserves totalling N43.6 million (Helleiner,1988) and they operated successfully in the Nigeria's agricultural crop marketing space until 1986 when they were proscribed by the Federal government for alleged professional inefficiency and mistrust.

Today, the marketing and distribution of the bulk of agricultural products are in the hands of private individuals and co-operative societies (Adekanye,1988).Again, some acts of corruption bordering on adulteration, distortion of measuring apparatus and poor product qualities now characterize the marketing of agricultural export commodities.Perhaps,the most disturbing implication of this scenario is the recent ban of 42 Nigeria's agricultural food products from the European Union (EU) markets for alleged non-compliance with the minimum quality standards. Some of the affected food products were said to have been contaminated by aflatoxins, making them unfit for human and livestock consumption. This development has grossly affected the level of competitiveness of the Nigeria's agricultural export products, particularly at the international markets (NEPC,2015). It has again negatively affected the household income levels of the farming households in the past months (CBN,2015). It therefore becomes imperative for all exporters of agricultural products in Nigeria to adhere to the global standards (international best practices) in food product exports, especially on quality assurance.

1.2 Objectives of the study

The broad objective of this study is to examine the level of market competitiveness for selected agricultural commodities and farmers' household income. Specifically, the study;

a) Investigated the level of market competitiveness and consumer preference for selected internationally traded food products in Nigeria.

b) Established the existing relationship between the level of quality assurance deficit of export commodities, market competitiveness and farmers' income.

MATERIAL AND METHODS

Both primary and secondary data were used for this study. Primary data were obtained on the income levels of the exporters of four (4) purposively selected Nigeria's agricultural food exports (cowpeas, dried maize, palm oil and melon seeds).These commodities were sampled for the study because of their strategic importance in the list of Nigeria's agricultural export food items. Samples of export food items were taken with the support and guidance of Nigeria Export Promotion Council (NEPC) and National Agency for Food, Drug Administration and Control (NAFDAC).Secondary data were also used to source data and information from the various publications of the Central Bank of Nigeria, National Bureau of Statistics, Federal Ministry of Agriculture, Nigeria Customs and Excise Department, Federal Ministry of Health, and other relevant bodies. These data consisted of information on the Nigeria's major agricultural export commodities since 1980 to 2014.Emphasis was placed on the export quantities, domestic price of the export commodities and the equivalent foreign price, the destination countries of export and challenges of international trading among other issues. Information was also sought on the types of preservations, preservative chemicals being used for the export agricultural commodities and dosage levels.

For objective 1, data were collected on the price regime of four (4) of the Nigeria's major agricultural export products (cowpea, melon seed, dried maize, and palm oil) at the international markets. Then, average market prices were

obtained for these food products (in the UK markets) and the equivalent amounts of similar commodities at the local markets in Nigeria and these prices are compared to appreciate the level of parity (or otherwise).The closer these prices, when compared, the more competitive they are. Own-price elasticity was also computed to again observe the degree of responsiveness of the export quantities to declining market prices at the international market in the UK. Thus, according to Frank and Bernanke (2004), own-price elasticity,

$$\varepsilon_{op} = \frac{\delta Q/Q}{\delta P/P} \quad (1)$$

$$= P/Q * 1 / \text{Slope} \quad (2)$$

Where,

ε_{op}= Own-price elasticity of the export commodities.

Q=Quantity of Nigeria's export at a given time ('000 tonne)

δQ=Change in quantity of Nigeria's export at a given time ('000 tonne)

P=International Market Price (own) of Nigeria's export commodity at a given time (£)

δP=Change in International Market Price (own) of Nigeria's export commodity at a given time (£)

Thus,own-price elasticity was computed for all the four (4) selected agricultural commodities to ascertain the level of reaction of the international market to changing price situations.

For objective 2, a multiple regression model was used to establish the relationship that existed among the level of quality assurance deficit of the export commodities, market competitiveness and the amount paid as tax on agricultural export commodities, among others.

$$\text{Thus, } Y_N = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e_i \quad (3)$$

Where,Y_N is the annual farm income of the exporter,

X_1 =Level of quality assurance deficit (mg/kg).Quality assurance deficit was captured by the difference between the estimated quantities of pesticide residues found in samples of selected food items which were prepared for export to international market (in UK) and the acceptable maximum residue limit of 0.01 mg/kg. These samples were collected with the assistance of Nigeria Export Promotion Council (NEPC), Lagos, Nigeria.

X_2 = Level of market competitiveness for selected Nigeria's internationally- traded agricultural export commodities (i.e. cowpea, melon seed, dried maize and palm oil) (in £).

Basically, market price competitiveness measures the level of equality/ parity (or otherwise) between international (UK) market prices of the Nigeria's agricultural export food items and the prices of similar items in the Nigerian market.

X_3 = Tax paid on Export commodity (Naira)

X_4 = Annual Output of Export Commodity (tonnes)

X_5 =Government Policy on Export Commodity (Dummy: If favourable to export=1,if otherwise=0)

e_i=Stochastic error term, which is random in behaviour.

N=Number of agricultural commodity exporters which is equal to 200.

This model was used to run the analysis separately for each of the four (4) selected agricultural export commodities listed above.

RESULTS AND DISCUSSION

International market for Nigeria's export commodities continue to vary in reaction to changing market prices and consumer preferences which is often reflected by the direction of consumer demand for the commodities. Basically, at the local level, the market demand for most agricultural commodities is often high (especially during off-season), even when prices are significantly rising (high elasticity).This is a common market trend in most developing economies where there are limited storage facilities and low level of agro-processing technologies which could add values to harvested farm produce. Again at the international level, the demand for these commodities was highly elastic between 10980-1992 when the exporters were observing the basic safety regulations governing the sales of the commodities. However, there was a sharp decline in the elasticity of demand for these commodities when less attention was paid to the observance of the basic safety precautions on agricultural exports by the Nigerian exporters. From Table 1 below, it is indicated that own –price elasticity values drastically declined for all the export commodities between 2004-2014 (compared with the previous years) because the demand for the selected Nigerian agricultural exports dropped at the international (UK) market. This development was largely due to the rejection of many of the nation's agricultural export commodities by the UK market as a result of allegation of non-compliance with the regulations on standards and international best practices on food storage/ preservation techniques, especially in the past one decade.

Table 1: Determination of Own-Price Elasticity for Nigeria's Export Commodities

Export Commodity	Year/Own-Price Elasticity (%) φ		
	1980-1992	1993-2003	2004-2014
Cowpea	124.6	66.4	34.6
Dried Maize	118.3	58.3	43.1
Melon Seed	106.4	67.6	22.4
Palm Oil	122.6	45.7	18.3

φ ***Elasticity,which is the measure of the percentage change in quantity demanded expressed in relation to the percentage change in price of the commodity,could be measured in percentages (Please see Timothy Taylor and Steven A.Greenlaw (2014:Principles of Macroeconomics.Pp105-124)).***

Source:Nigeria Export Promotion Council,(NEPC),Lagos, Nigeria.

Between 1980 and 2014, there was a mere marginal increase in the quantities of agricultural export commodities that were produced domestically in Nigeria (Table 2).The least yearly increase was observed in the case of palm oil while maize recorded the highest. The use of traditional farming technologies, poor storage/preservation techniques,

low-yielding production technology and largely aged farming population were responsible for the generally low output levels of the major export commodities in Nigeria. On the whole, only about 35 per cent of the official production output was exported abroad (Table 2).These development had negative implications on the general income level of the farming households.

Table 2: Profile of selected Nigeria's agricultural export commodities (1980-2014)

Export Commodity	Year /Average Yearly Production level in metric tonne			Year/Average Annual Export Quantity1 (metric tonne)		
	1980-1992	1993-2003	2004-2014	1980-1992	1993-2003	2004-2014
Cowpea	3669.6	4210.7	4328.3	1284.36	1473.75	1514.91
Dried Maize	8527.9	8685.1	9503.4	2984.77	3039.79	3326.19
Melon Seed	421.1	450.1	479.4	147.39	157.54	167.79
Palm Oil	161.5	172.7	187.0	56.53	60.45	65.45

Source:National Bureau of Statistics,NBS,Lagos,Nigeria,2015.

[1]Only about 35 per cent of the official yearly output was exported.

The level of market acceptability and consumer preference for good is often measured by the price consumers are willing to pay for such commodities, particularly at the international market level where the Nigerian export commodities are in strong market competition with other commodities from other sources. Thus, the average domestic market price (per tonne) was estimated and then compared with the international (UK) prices of the selected export commodities, using the average foreign exchange rate of the Nigerian local currency,(Naira) to the US Dollar (Table 3).Between year 2000 and 2008,it was shown that the domestic prices of the export commodities were highly competitive as their local prices were very close and sometimes higher than international prices.However,the reverse was the case between year 2009 and 2014,as the domestic prices of the Nigerian export commodities declined and the demand for them dropped hence they could not favourably compete with their international market prices (Table 3).A huge quantities of the export commodities were again rejected at the international market largely due to alleged compromised qualities. The US Dollars equivalent values of these commodities were higher than the international prices. This again indicated that there was no parity price2 especially for cowpea, dried maize,and palm oil in the last one decade.Thus,many exporter farmers were discouraged from exporting their commodities and were therefore left with option of patronizing the Nigerian local markets. This led to a decline in the sale of farm produce and a reduction in the general household level of many Nigerian farmers.

Table 3: Market Price Competitiveness of selected Nigeria's agricultural export commodities.

Export Commodity	Year /Average Domestic Market Price per metric tonne (Naira)			Year /Average International Price per metric tonne (Dollars)		
	2000-2003	2004-2008	2009-2014	2000-2003	2004-2008	2009-2014
Cowpea	49,370.0 ($509.81)	56,045.0 ($449.62)	62,717.2 ($403.53)	97.6	101.3	615.85
Dried Maize	28,054.2 ($289.69)	36,782.3 ($295.08)	47,921.0 ($308.33)	42.8	65.9	342.37
Melon Seed	22,134.0 ($228.56)	29,006.0 ($252.69)	34,974.7 ($225.03)	22.3	34.9	118.7
Palm Oil	88,300 ($911.81)	110,151.1 ($883.68)	133,003.6 ($855.77)	121.4	147.5	920.89
Mean Exch. rate of Naira/US$	96.84	124.65	155.42			

Source:National Bureau of Statistics,NBS,Lagos,Nigeria,2015

Note: All values in parentheses were the domestic market prices of the selected Nigeria's agricultural commodities in US Dollars.

[2]Parity price provides the farm products the same purchasing power per unit for goods and services used in both production and family consumption relative to prices that prevailed in the base year. It often reflects the concern of government about the purchasing power of the farmers. These are popular parameters by which many developed economies have shown concerns about the purchasing power of their farmers.

The level of market competitiveness and quality assurance of the farm output often determine the amount of income farmers realise at the end of the farming season. This is so because the farmers have to present their farm products at the international market where these products compete with other commodities from various sources. Hence, the need to observe and comply with the international best practices on standards and grading of these agricultural commodities, especially with respect to the use of chemical as preservatives. These farmers therefore need to mind the types, quantities and methods of preservatives being used for their farm products so that the quality of these products is assured in the market; since this has a serious implication on market prices. The most common types of chemicals being used for the preservation of farm products include Gamma BHC/lindane,Malathion,Iodafenphos (such as Nuvanol and Elocril),Dichlorvos and synthetic pyrethroid (e.g. permethrin),among others.

For all the four (4) agricultural export commodities, the estimated values of parameter co-efficient estimates (Table 4) indicated that the level of market competitiveness and quality assurance deficit were significant determinants of the annual farm income of the exporters of the agricultural commodities.Specifically,for cowpea, melon seed and palm oil the two parameters were significant at 1 per cent level .In the case of dried maize, quality assurance deficit was

found to be a significant parameter at 1 per cent while market competitiveness was significant at 5 per cent level. In addition,tax paid on export commodity, annual output level and government policy on exports were also found to be significant at various levels.However,tax payment and government policy were not significant in the case of dried maize and cowpea respectively. High values of adjusted R2 ,which varied between 0.67 (for melon seed) and 0.92 (for palm oil) indicated the correctness and exactness of the specification of the regression model as stated in equation (3). High values for Log likelihood function, which ranged between 233.04 (for cowpea) and 771.53 (for melon seed) again corroborated the feeling that the regression model had a reasonably acceptable level of reliability.

Table 4: Multiple Regression Analysis indicating relationship between

	COWPEA		MELON SEED		DRIED MAIZE		PALM OIL	
Variable	Parameter Co-efficient	T-value	Parameter Co-efficient	T-value	Parameter Co-efficient	T-value	Parameter Co-efficient	T-value
Constant term	237.92*** (73.89)	3.22	45.54*** (7.18)	6.34	18.46*** (0.78)	23.73	26.56 (21.25)	1.25
Quality Assurance Deficit (X_1)	15.36*** (1.80)	8.54	22.45*** (8.47)	2.65	82.21*** (30.11)	2.73	34.54*** (2.43)	14.23
Market Competitiveness (X_2)	243.32*** (46.52)	5.23	24.31*** 4.29)	5.67	36.45** (19.81)	1.84	835.31*** (69.44)	12.03
Tax on Export Commodity (X_3)	145.9** (86.83)	1.67	331.95*** (80.57)	4.12	54.2 (49.72)	1.09	134.10*** (43.12)	3.11
Annual Output level (X_4)	43.8*** (11.01)	3.98	121.9*** (49.76)	2.45	51.9*** (17.96)	2.89	212.6*** (40.34)	5.27
Govt. Policy (X_5)	88.3 (70.64)	1.25	332.80*** (69.62)	4.78	72.9*** (10.53)	6.92	227.5*** (78.18)	2.91
Chi square	65.52	-	71.39	-	49.32	-	85.03	-
Adjusted R^2	0.74	-	0.67	-	0.78	-	0.92	-
Log likelihood function	233.04	-	771.53	-	439.20	-	628.91	-

Farmer's income and determinant variables
Dependence variable= Annual farm income of the exporter
******=Significant at 1 % level **=Significant at 5 % level***

Figures in parentheses are standard errors.

This study has investigated the effect of quality assurance deficit and market competitiveness on the household income of the Nigerian agricultural commodity exporters. Many of the export commodities now fail the quality assurance test hence they cannot sustain their competition in the international markets which also display many quality products. The immediate implication of this development is that many of the Nigeria's export commodities were restricted from the UK markets. This has caused a huge decline to the annual income level of the Nigerian farm producers who often export their products. But all hopes are not lost, especially if these farmers are able to observe and comply with the global best practices on the use of chemical preservatives for their exported farm products. This will reduce the level of chemical residues which are considered injurious to the health of the consumers of these food items. The local (traditional) methods of product storage and preservation which do not involve the use of chemical substances could be adopted by the farmers as alternative ways of protecting the qualities of farm produce. With this, the Nigerian agricultural export commodities will again be accepted and remain competitive at the international markets. This will bring a higher income to the Nigerian agricultural commodity exporters and ultimately improve the general income levels of the farming households in Nigeria.

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SCIENTIFIC PAPER

ECONOMIC PROFITABILITY OF SWEET PEPPER PRODUCTION UNDER DIFFERENT IRRIGATION LEVELS AND POLYETHYLENE MULCH IN A PLASTIC GREENHOUSE

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Abstract: *Field experiment was conducted, during two successive seasons of 2014- 2015 and 2015- 2016, at Dokki protected agricultural site, Giza Governorate, Egypt, to study the profitability of different applied irrigation levels and polyethylene (PE) mulch on plant growth and yield of sweet pepper, (Capsicum annum L.) cv. Godion F1, under plastic house condition. Three irrigation levels (0.50, 0.75 and 1.00) of crop evapotranspiration (ETc), using drip irrigation system and three PE mulch treatments (transparent, black and control) were applied. Data revealed that black PE recorded the highest values of early and total fruit yield per plant during the two seasons. Increasing water level up to 1.00 (ETc) enhanced yield with different PE mulch treatments, while water use efficiency (WUE) decreased with increasing water level. However, Using 0.50 (ETc), with different PE mulches increased WUE compared to using 0.75 (ETc) or 1.00 (ETc).*
The economic assessment of costs and returns from different treatments were calculated. It was found that the average yield was higher in 1.00 ETc with black mulch. Gross margin per 540 m² were analysed using yield data, price structures and production costs. The 1.00 (ETc) with black mulch had the highest gross margin which is USD 416.8 and USD 533 (1 USD= 9 Egyptian pound) for the first and second seasons, respectively. The benefit cost ratios (BCRs) per 540 m² were analysed, and 1.00 (ETc) with black mulch had the highest BCR with 1.36 in the first season and 1.45 in the second season.

Keywords: *Economic Profitability, Etc, Gross Margin, Sweet Paper, WUE.*
(JEL Classification: *Q 01, Q 12, Q 19*)

INTRODUCTION

Irrigation water is gradually becoming scarce not only in arid regions but also in the regions where rainfall is sufficient. Therefore, water saving and conservation is essential to support agricultural activities (Abdrabbo et al., 2009). Efficient use of available fresh water is becoming more important. Agronomic measures such as varying tillage practices, mulching and anti-transparent can reduce the demand for irrigation water and improve irrigation water use efficiency (Farag et al., 2010). The mulch determines its energy-radiating behavior and its influence on the microclimate around the plant. Black, transparent and white mulches are used in the commercial production of vegetable crops today all over the world (Abdrabbo et al., 2010). Transparent and black mulches promote a relatively higher temperature at the soil surface, increase soil heat flux and, as a consequence, the minimum and maximum soil temperature are increased than bare soil treatments (Abdrabbo et al., 2009; EI-Dolify et al., 2016). The beneficial responses of plants to plastic mulch such as improving fruit yields, earlier production and better fruit quality; have been studied by many authors (Bonnano and Lamont, 1987; Zakher and Abdrabbo, 2014). Additional benefits of plastic mulches are their ability to conserve soil moisture (Lamont, 1993). Using transparent polyethylene mulch, installed over the soil surface to reduce the water evaporation, increase air temperature around plant roots. Furthermore, their usage has been associated with

increased plant growth, higher yields as well as earliness of harvest (Abdrabbo et al., 2014). Despite the wide use of plastic mulches for vegetable crops production, most studies on irrigation have been conducted on bare soil production systems (Kirda et al., 2004). Results from those studies may not apply to regular horticulture practices (mainly raised beds covered with black plastic mulch) because using mulch serves as a barrier for water evaporation from soil surface (Farrag et al., 2016). Liakatas et al. (1986) reported that maximum soil heat flux was up to 67% higher under transparent mulch in comparison to the black mulch. White polyethylene used in this study trended to increase maximum temperature compared to the other opaque mulches (black and co-extruded white-on-black polyethylene). This increase probably occurred because white polyethylene is not completely opaque. Using polyethylene mulch improves vegetative growth parameters, plant length, leaves area and chlorophyll content of plants (Abdrabbo et al., 2005).

Rajbir Singh et al. (2009) reported that drip irrigation to tomato at 80 per cent ET resulted in higher net returns (Rs 34431/ ha) and benefit cost ratio (1.76) compared to 100 and 60 per cent ET. However, net returns (Rs 51386/ ha) and benefit cost ratio (2.03) were further increased when drip irrigation to tomato at 80 per cent ET was coupled with polyethylene mulch compared to other treatments.

The main objective of this study was to evaluate the economic feasibility of sweet pepper production under different irrigation levels and polyethylene mulch in a plastic greenhouse.

MATERIALS AND METHODS

The experiment was carried out at Dokki protected agricultural site, Giza governorate, Egypt. The treatments comprised of:

- Three applied irrigation levels 0.50, 0.75 and 1.00 of the (ETc), the ETo was estimated using RH% equation (Abou Hadid and El-Beltage, 1992) as follow: ET_0 = 5.654 - 0.059* (RH) Where ET0= estimated evapotranspiration and RH= average daily relative humidity. Water was applied using drip irrigation system.
- Three polyethylene (PE) mulch treatments (transparent, black and no cover (control)).

The experiment was designed in a split plot arrangement with three replicates. Irrigation levels were in the main plots, while PE mulch was allocated in the sub plot. Each sub plot area was 10 square meters (one meter width x ten meter length). Dates of transplanting were October 12, 2014 and October 15, 2015 for first and second seasons, respectively. Samples of five plants from each experimental plot were taken to determine growth parameters at the end of season (mid of April 2015 and 2016) as follows: plant length, number of leaves per plant, leaf area and fruit weight per plant. For mineral analysis, the dried young mature leaves were digested in sulphuric acid and hydrogen peroxide according to the method described by Allen (1974). Total nitrogen was determined by Kjeldahl method according to the procedure described by FAO (1980). Phosphorus content was determined using spectrophotometer according to Watanabe and Olsen (1965). Potassium content was determined photo-metrically using flame photometer as described by Chapman and Pratt (1961). The permanent wilting point (PWP) and field capacity (FC) of the trial soil were determined according to Israelsen and Hansen (1962). The soil physical properties results were in table 1.

Table 1. Physical properties of the soil of the experiment analysed before cultivation

	Physical properties							
Location	Soil depth cm	Sand %	Clay %	Silt %	Texture	FC %	PWP %	Bulk density g/cm^3
Dokki - Giza	0-30	09.3	66.2	25.5	Clayey	25.6	10.9	1.17

Soil temperature was measured by soil thermometer at 15 cm depth; it was recorded daily at mid-day from first of November till the end of April, during the two seasons. The total amount of drip irrigation was applied by water flow meter for each treatment (EC of water irrigation 0.45 dS/m). The greenhouse dimensions were (60 m length, 9 m width and 4 m height). The number of sweet pepper plant per square meter was 2.22 plants. The (WUE) was calculated according to FAO (1982) as follows: The ratio of crop yield (y) to the total amount of irrigation water use in the field for the growth season (IR), WUE (Kg/m^3) = Y(kg)/ IR (m^3).

Production costs and profitability analysis has been the fundamental tool for growers and investors to do investment analyses and make decisions, conducting business transactions, and developing risk management strategies. Inputs and prices were collected from cooperating growers and supply and equipment dealers. The benefit cost analysis (BCA), as an economic analysis tool for decision making and project evaluation, was chosen as the most appropriate economic method to be use. BCA is a widely used tool for comparing alternative courses of action by reference to the net benefits that they produce, and comparing a base case (no change) with the proposed option. BCA's for multiple projects can be compared to determine which project has a higher economic return relative to the others with higher BCA's indicating higher return (Gittinger, 2003).

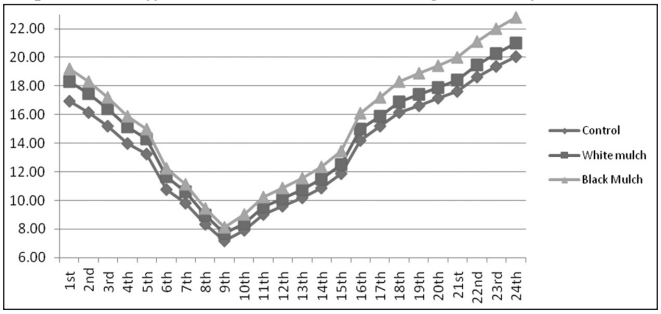
RESULTS AND DISCUSSIONS

Soil temperature

Average weekly maximum and minimum soil temperature (°C) at 15 cm depth under different mulch treatments in November, December, January, February, March and April are shown in figures (1) and (2), respectively. During the growing seasons, the highest maximum soil temperature, from 1st November till the end of April, was found under the transparent mulch (Fig. 1). Generally, the PE mulch had higher temperature than control by 1.5- 2.5°C. Highest minimum temperature was recorded under black mulch followed by the white mulch, while the control treatment had the lowest

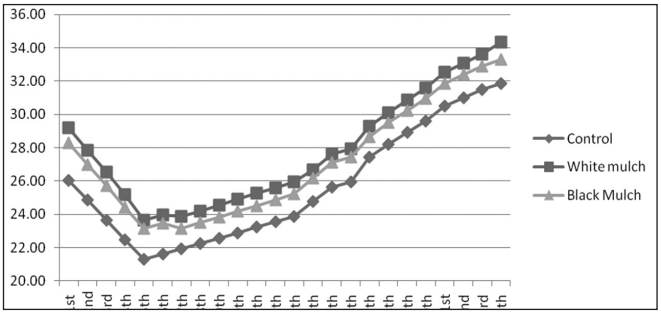
minimum temperature.

Fig. 1. The average weekly maximum soil temperature (°C) at 15 cm depth under different mulch treatments during seasons of 2014- 2015



and 2015- 2016 from 1st November till April (24 weeks)

Fig 2. The average weekly minimum soil temperature (°C) at 15 cm depth under different mulch treatments during seasons of 2014- 2015



and 2015- 2016, from 1st November till April (24 weeks)

The obtained results are in agreement with those of Abdrabbo et al. (2015); Abdrabbo et al. (2010); Abdrabbo et al. (2009); Kirda et al. (2004); Lamont, (1993). Moreover, the advantage of transparent films, which produced a considerable build up of heat in the soil during the day because of better short wave infrared radiation, thus provides the maximum of heat. Under black plastic film, heat was dispatched by conduction, half going into the soil and half into the air space; the soil was therefore heated up quite slowly. While with transparent film, the film transmitted practically the whole solar radiation that became absorbed by the soil; the soil was therefore heated up more quickly (Abdrabbo et al., 2009; Lamont, 1993).

Vegetative characteristics

The obtained results in table 2 revealed that irrigation levels and mulch treatments significantly affected vegetative characteristics (plant length, number of leaves and total leaf area) in the two growing seasons. The 1.00 ETc treatments produced the highest vegetative characteristics. The 0.75 ETc came in the second rank, while 0.50 ETc produced the lowest vegetative characteristics. Increasing vegetative characteristics under 1.00 ETc irrigation level could be attributed to the suitable irrigation quantity, especially in the early stage of crop growth, which enhanced a deeper and more extensive root system (Marouelli and Silva, 2005; Ngouajio et al., 2007; EI-Dolify et al., 2016). Regarding to the mulch treatments, data indicated that black PE mulch resulted in the highest vegetative characteristics during the two seasons. The lowest plant length, number of leaves and total leaf area were obtained by control treatment (bare soil).

The interaction among different irrigation levels and PE mulch treatments were significant for vegetative characteristics during the two studied seasons. The highest vegetative growth was preceded by 1.00 ETc combined with black mulch. Followed by 1.00 ETc combined with transparent mulch. The obtained results are in agreement with those of Abdrabbo et al (2010); Ngouajio et al. (2007); Soltani et al. (1995), who revealed that mulching has contributed positively to improving growth and productivity. Although, clear plastic mulch may result in an increase in soil temperature, the presence of light led to the disadvantage of weed growth. While, the absence of light with black plastic did not allow photosynthesis of weeds under the film and therefore weed growth was suppressed (Abdrabbo et al., 2010; Farag et al.., 2010; Zakher and Abdrabbo, 2014).

Yield

Data in table 3 showed that using 1.00 ETc irrigation level increased the sweet pepper fruit weight per plant compared to the other irrigation treatments during the two growing seasons. The 0.75 ETc came in the second rank. The higher yield production under 1.00 ETc may be due to proper balance of moisture in plants, which creates favorable conditions for nutrients uptake, photosynthesis and metabolites translocation. Other possibility was increasing available water and nutrients uptake, which ultimately accelerated the rate of vegetative growth and yield (Abdrabbo et al., 2009; Hashem et al., 2014; Abdrabbo et al., 2014; EI-Dolify et al., 2016). Regarding the effect of PE mulch treatments the obtained data revealed that black PE recorded the highest values of yield per plant in the two studied seasons. These results was in agreement with those obtained by Abdrabbo et al., 2009; EI-Dolify et al. (2016); Farrag et al. (2016), who found that using PE mulch increases plant root zone temperature, which have an important role in plant growth and productivity. Black and transparent PE mulches increase vegetable crops growth and productivity compared to bare soil; this increase has been reported especially in cold season, where soil temperature is the limiting factor for plant growth (Farrag et al., 2016). Referring to the interaction effect between irrigation level and PE mulch treatments, the obtained data indicated that increasing irrigation level led to increase sweet pepper yield under tested PE mulch up to 1.00 ETc. The highest sweet pepper yield was obtained by 1.00 ETc with black PE mulch followed by 1.00 with transparent PE mulch. The lowest yield was obtained by control treatment with different irrigation levels. Reduction in irrigation requirement as well as consumptive use due to mulching at a particular irrigation schedule is a definite advantage of mulching (Zakher and Abdrabbo et al., 2014; EI-Dolify et al., 2016). Sustained moisture supply by using proper water quantity with mulched situation was enhanced plant yield. The irrigation water supply, irrespective of irrigation methods, was retained in the soil and efficiently distributed for crop growth. This has enabled the crop not to distinguish significantly between the levels of irrigation it received, once the crop was mulched.

Furthermore, using mulches with vegetable crops under unheated plastic house resulted in an increase in vegetative growth i.e. plant length, leaf number, leaf area, and total fruit yield of plants. These results are in agreement with those reported by Farag et al (2010). Increased yield could be largely attributed to the increase in soil temperature due to application of black or transparent mulch treatments, which resulted in enhancement of soil environment around plant roots, which led to increasing plant vegetative growth, and hence increasing nutrient absorption and uptake (Abdrabbo et al., 2009; Abdrabbo et al., 2010; Abdrabbo et al., 2015).

Table 2. Sweet pepper plant length, number of leaves and total leaf area per plant as affected by different irrigation levels and mulch treatments during seasons of 2014- 2015 and 2015- 2016

1st season					2nd season			
	plant length							
	0.50 ETc	0.75 ETc	1.00 ETc	Mean	0.50 ETc	0.75 ETc	1.00 ETc	Mean
Control	91.6	80.8	79.0	83.8	97.9	86.1	83.4	89.1
Transparent mulch	96.9	90.7	80.8	89.5	104.6	97.0	87.0	96.2
Black mulch	103.2	95.1	85.3	94.5	108.4	102.4	91.5	100.7
Mean	97.2	88.9	81.7		103.6	95.1	87.3	
	LSD 0.05							
Irrigation (A)			0.41				0	
Mulch (B)			0.14				0.15	
(A) x (B)			0.59				0.62	
	Number of leaves							
	0.50 ETc	0.75 ETc	1.00 ETc	Mean	0.50 ETc	0.75 ETc	1.00 ETc	Mean
Control	129	149	172	150.3	135	141	165	146.9
Transparent mulch	140	159	177	158.6	145	168	189	167.4
Black mulch	143	163	184	163.1	148	171	194	170.9
Mean	137	157	178		142.6	160.1	182.6	
	LSD 0.05							
Irrigation (A)			1.06				1.10	
Mulch (B)			0.17				0.35	
(A) x (B)			1.53				1.54	
	Total leaves area							
	0.50 ETc	0.75 ETc	1.00 ETc	Mean	0.50 ETc	0.75 ETc	1.00 ETc	Mean
Control	3952	4757	5665	4791	4124	4488	5486	4699
Transparent mulch	4274	5063	5822	5053	4432	5363	6210	5335
Black mulch	4882	5185	5815	5294	4550	5560	6503	5537
Mean	4370	5002	5767		4369	5137	6066	
	LSD 0.05							
Irrigation (A)			510				533	
Mulch (B)			225				243	
(A) x (B)			630				942	

Plant elemental content

Data in table 4 showed that the applications of different irrigation levels and mulch treatments significantly affected the uptake of NPK by sweet pepper plant during the two growing seasons. Using 0.50 of ETc increased the NPK percentage of sweet pepper fourth leaf followed by 0.75 ETc, while the lowest NPK percentage was obtained by 1.00 ETc. The increasing uptake of NPK by 0.50 ETc may be due to the dilution effect (increase plant biomass at a constant nutrient stock) then the big vegetative growth will dilute the nutrient percentage in plant leaf and second are nutrient movements toward fruits or other plant organs which mean higher productivity led to decrease the percentage of nutrient of sweet pepper plant leaf (Abdrabbo et al., 2005).

Table 3. Sweet pepper fruit weight per plant as affected by different irrigation levels and mulch treatments during seasons of 2014- 2015 and 2015- 2016

1st season					2nd season			
	Early yield							
	0.50 ETc	0.75 ETc	1.00 ETc	Mean	0.50 ETc	0.75 ETc	1.00 ETc	Mean
Control	0.72	0.84	1.03	0.86	0.87	1.05	1.24	1.06
Transparent Mulch	0.79	0.91	1.17	0.96	0.93	1.22	1.36	1.17
Black mulch	0.91	0.93	1.27	1.04	1.16	1.29	1.52	1.32
Mean	0.81	0.89	1.15		0.99	1.19	1.37	
	LSD 0.05							
Irrigation (A)			0.10				0.11	
Mulch (B)			0.09				0.10	
(A) x (B)			0.14				0.14	
	Total yield							
	0.50 ETc	0.75 ETc	1.00 ETc	Mean	0.50 ETc	0.75 ETc	1.00 ETc	Mean
Control	2.20	2.52	3.09	2.60	2.35	3.16	3.43	2.98
Transparent Mulch	2.57	2.85	3.51	2.98	2.77	3.45	3.77	3.33
Black mulch	2.68	3.13	3.75	3.18	3.00	3.63	3.98	3.54
Mean	2.48	2.83	3.45		2.71	3.41	3.73	
	LSD 0.05							
Irrigation (A)			0.13				0.13	
Mulch (B)			0.08				0.08	
(A) x (B)			0.24				0.25	

Mulch treatments significantly affected the percentage of NPK in sweet pepper leaf. Transparent PE resulted in the highest values of NPK percentage followed by black PE mulch. The lowest NPK percentage was obtained by control (bare soil) treatment during the two seasons. Regarding the interaction effect among irrigation and mulch, the highest NPK percentage was obtained by 0.50 ETc combined with transparent PE mulch followed by 0.50 ETc with black mulch. The lowest NPK percentage was obtained by control treatment with different irrigation levels during both seasons. Increased yield could be

largely attributed to increase in soil temperature at 15° C due to application of transparent or black mulch covers. These resulted in enhancement of soil environment around roots of sweet pepper plants that led to enhancing plant growth, and hence improve nutrient absorption and uptake (Abdrabbo et al., 2009).

These results were in line with those obtained by Pan et al. (1999); Fonsecal et al. (2003). Optimal root zone temperature with availability of water allow for adequate root function including better uptake of water and nutrients. Plant nutrient uptake, plant growth and yield under mulch fit a quadratic relationship with root zone temperature (Abdrabbo et al., 2014). Using of proper water quantity, especially in clayey soil, allows plants to use water and nutrients from deeper soil, thus enhance water and nutrients use efficiency, with a decline in nitrogen leaching. Excess irrigation not only reduces crop productivity, but also increases nutrient leaching and environmental hazards (EI-Dolify et al., 2016).

Table 4. NPK contents in sweet pepper leaf as affected by different irrigation levels and mulch treatments during seasons of 2014- 2015 and 2015- 2016

1st season					2nd season			
	Nitrogen%							
	0.50 ETc	0.75 ETc	1.00 ETc		0.50 ETc	0.75 ETc	1.00 ETc	
Control	1.84	1.72	1.68	1.75	1.87	1.73	1.64	1.75
Transparent mulch	2.21	2.15	1.96	2.11	2.34	2.28	2.08	2.24
Black mulch	2.14	2.09	1.86	2.03	2.27	2.22	1.97	2.15
Mean	2.06	1.99	1.83		2.16	2.08	1.90	
	LSD 0.05							
Irrigation (A)		0.26		0.27				
Mulch (B)		0.14		0.14				
(A) x (B)		0.32		0.34				
	Phosphorus %							
	0.50 ETc	0.75 ETc	1.00 ETc		0.50 ETc	0.75 ETc	1.00 ETc	
Control	0.41	0.38	0.34	0.38	0.42	0.36	0.33	0.37
White mulch	0.46	0.42	0.39	0.42	0.49	0.45	0.41	0.45
Black mulch	0.45	0.40	0.38	0.41	0.48	0.42	0.40	0.44
Mean	0.44	0.40	0.37		0.46	0.41	0.38	
	LSD 0.05							
Irrigation (A)		0.08		0.08				
Mulch (B)		0.03		0.04				
(A) x (B)		0.11		0.12				
	Potassium %							
	0.50 ETc	0.75 ETc	1.00 ETc		0.50 ETc	0.75 ETc	1.00 ETc	
Control	2.12	2.01	1.84	1.99	2.14	2.05	1.87	2.02
Transparent mulch	2.41	2.34	2.21	2.32	2.61	2.58	2.33	2.51
Black mulch	2.35	2.21	2.14	2.23	2.55	2.42	2.18	2.38
Mean	2.29	2.19	2.06		2.43	2.35	2.13	
	LSD 0.05							
Irrigation (A)		0.09		0.10				
Mulch (B)		0.04		0.04				
(A) x (B)		0.19		0.21				

Water Use Efficiency (WUE)

Data in table 5 showed that increasing irrigation quantity up to 1.00 (ETc) led to the decrease of WUE for all irrigation treatments. The highest WUE obtained by 0.50 (ETc). Regarding the effect of different mulch treatments on WUE, data showed that were significant differences between treatments, using PE mulch led to increasing WUE during the two tested seasons. There was a significant interaction among irrigation and mulch treatments for WUE. The highest WUE obtained by 0.50 (ETc) combined with black PE mulch. The 1.00 (ETc) combined with control treatment had the lowest WUE during the two studied seasons. These results were in line with those obtained by Kirda et al. (2004); Abdrabbo et al. (2009); Farag et al. (2010); Hashem et al. (2014); Zakher and Abdrabbo (2014); Abdrabbo et al. (2015); EI-Dolify et al. (2016); Farrag et al. (2016).

Table 5. Water use efficiency as affected by different irrigation levels and mulch treatments

	WUE							
	0.50 ETc	0.75 ETc	1.00 ETc	Mean	0.50 ETc	0.75 ETc	1.00 ETc	Mean
Control	7.34	5.60	5.15	6.03	7.58	6.80	5.54	6.64
Transparent Mulch	8.57	6.33	5.85	6.92	8.92	7.42	6.09	7.48
Black mulch	8.93	6.95	6.25	7.37	9.67	7.81	6.41	7.97
Mean	8.28	6.29	5.75		8.73	7.34	6.01	
	LSD 0.05							
Irrigation (A)	0.16		0.17					
Mulch (B)	0.10		0.11					
(A) x (B)	0.29		0.30					

ECONOMIC CONSIDERATIONS

Total costs of production

The details of total cost components of sweet pepper production under various irrigation levels with different mulch treatments in USD, during the two production seasons are given in Table 6.

There were almost no significant differences in costs between irrigation levels and PE mulches of sweet pepper for the two production seasons. The only item that varied was value of irrigation at 50%, 75% and 100%, while the factors that varied were farm gate prices.

The value of transplanted were the main cost items for all treatments, (39% of total production costs), followed by the value of plastic about (19.5% of the total production costs), while the value of sterilisation came in the third place about (14.7% of total production costs) for the first season. For the second season, the value of transplanted where the main cost items for all treatments, (38.5% of total production costs), followed by the value of plastic about (19.0% of the total production costs), while the value of sterilisation came in the third place about (14.3% of total production costs).

Total return

The total return from different treatment combinations in the first season ranged between minimum USD 921.4 and maximum USD 1570.5 (Table 7). The highest total return USD 1570.5 was obtained with 1.00 ETc and black mulch, and the lowest total return USD 921.4 was obtained with 0.50 ETc and control. The total return from different treatment combinations in the second season ranged between minimum USD 202.81 and maximum USD 352.63 (Table 7). The highest total return USD 1719.4 was obtained with 1.00 ETc and black mulch, and the lowest total return USD 1015.2 was obtained with 0.50 ETc and control.

Gross margin

The presented results in table 7 show that the gross margins of different treatment combinations in the first season ranged between a minimum of USD -226.7 and a maximum of USD 416.8. The highest gross margin of USD 416.8 obtained with 1.00 ETc and black mulch, and the lowest gross margin of USD -226.7 obtained with 0.50 ETc and control. The presented results in table 7 show that the gross margins of different treatment combinations in the second season ranged between a minimum of USD -164.4 and a maximum of USD 533. The highest gross margin USD 533 was obtained with 1.00 ETc and black mulch, and the lowest gross margin USD -164.4 was obtained with 0.50 ETc and control.

Benefit cost analysis

Among the different treatments, the highest BCA in the first season was recorded 1.36 in 1.00 ETc with black mulch; while, the lowest BCA in the first season was recorded 0.8 in 0.50 ETc with control (Table 7). Among the different treatments, the highest BCA in the second season was recorded 1.45 in 1.00 ETc with black mulch; meanwhile, the lowest BCA in the first season was recorded 0.86 in 0.50 ETc with control (Table 7).

Table-6. Total production costs analysis of sweet paper due to different levels of irrigation (540 m²) during 2014 and 2015 seasons (USD)

Treatment combination	Land preparation	Transplants	Irrigation	Chemicals	Manure	Insecticides	Plastic	Maintenance	Sterilization	Threads and pillars	Labour	T. variable costs
First season												
50% Control	16.89	337.84	16.89	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1148.1
Transparent mulch	16.89	337.84	16.89	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1148.1
Black mulch	16.89	337.84	16.89	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1148.1
75% Control	16.89	337.84	19.71	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1150.9
Transparent mulch	16.89	337.84	19.71	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1150.9
Black mulch	16.89	337.84	19.71	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1150.9
100% Control	16.89	337.84	22.52	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1153.7
Transparent mulch	16.89	337.84	22.52	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1153.7
Black mulch	16.89	337.84	22.52	76.01	45.05	101.35	225.23	13.51	168.92	33.78	112.61	1153.7
Second season												
50% Control	19.71	337.84	18.02	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1179.6
Transparent mulch	19.71	337.84	18.02	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1179.6
Black mulch	19.71	337.84	18.02	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1179.6
75% Control	19.71	337.84	21.40	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1183.0
Transparent mulch	19.71	337.84	21.40	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1183.0
Black mulch	19.71	337.84	21.40	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1183.0
100% Control	19.71	337.84	24.77	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1186.4
Transparent mulch	19.71	337.84	24.77	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1186.4
Black mulch	19.71	337.84	24.77	78.83	45.05	101.35	225.23	15.77	168.92	33.78	135.14	1186.4

Table-7. Total yield, total cost of production, total return, gross margin and BCA of sweet paper due to various irrigation levels during 2014 and 2015 seasons (USD)

	First season					Second season				
Treatment combinations	Total yield Tonne	Total cost of production	Total return	Gross margin	BCA	Total yield Tonne	Total cost of production	Total return	Gross margin	BCA
50%										
Control	2.64	1148.1	921.4	-226.7	0.80	2.82	1179.6	1015.2	-164.4	0.86
Transparent Mulch	3.084	1148.1	1076.3	-71.8	0.94	3.324	1179.6	1196.6	17.0	1.01
Black mulch	3.216	1148.1	1122.4	-25.7	0.98	3.6	1179.6	1296.0	116.4	1.10
75%										
Control	3.024	1150.9	1055.4	-95.5	0.92	3.792	1183.0	1365.1	182.1	1.15
Transparent Mulch	3.42	1150.9	1193.6	42.7	1.04	4.14	1183.0	1490.4	307.4	1.26
Black mulch	3.756	1150.9	1310.8	159.9	1.14	4.356	1183.0	1568.2	385.2	1.33
100%										
Control	3.708	1153.7	1294.1	140.4	1.12	4.116	1186.4	1481.8	295.4	1.25
Transparent Mulch	4.212	1153.7	1470.0	316.3	1.27	4.524	1186.4	1628.6	442.3	1.37
Black mulch	4.5	1153.7	1570.5	416.8	1.36	4.776	1186.4	1719.4	533.0	1.45

Farm gate price per tonne in the first season = US$ 349. - Farm gate price per tonne in the second season = US$ 360.

CONCLUSION

From the present work it could be conclude that using PE mulch, especially black mulch, is considered useful for encouraging sweet pepper plant vegetative growth and getting high total yield. The use of 1.00 ETc with PE mulches is useful for increasing the early and total sweet pepper yield. This study serves as a guide for production practices and costs of production and profitability for growers, prospective growers, agriculture lenders, educators and others involved or have interest in fresh market sweet pepper production. The cost and return analysis indicated that the highest BCA (1.36 and 1.45) were obtained from the 1.00 ETc with black mulch in the first and second seasons, respectively.

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SCIENTIFIC PAPER

IMPACT OF TERRORISM ON AGRICULTURAL BUSINESS IN BORNO STATE, NIGERIA

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Abstract: *This study examines the impact of terrorism on agribusiness in Borno state. Terrorist activities in Borno state dates back to 2009 where a group of Islamic extremists popularly known as Boko Haram (meaning western education is a sin) became violent in their activities. The group operates significantly in north-eastern Nigeria where Borno state is located and since 2009. The presence of the group has led to collapse of socio-economic activities in Borno state among other states. Millions of people have been displaced fromtheir homes and forced to live in camps in neighbouring states. As a result, this study examines the impact of insurgency related activities on agribusiness in BornoState. Agricbusiness in Borno state can be measured using four different parameters, amount of area cultivated, annual crop production, rearing of livestock and fish farming. These are the major agricultural business residents of Borno state are engaged in. However due to unavailability of data, rearing of livestock and fish farming are dropped, thus focusing on area cultivated and annual crop production. As a result of these two variables, two models are developed. The first model measures the relationship between amounts of crop produced with insurgency related killings, while the second model measuresthe relationship between total areasof farmland cultivated with fatalities resulting from terrorist activity. This study employs Ordinary Least Squares methodology and finds that both relationshipsreveal negative results thus indicating statistically significant negative impact of terrorism on agribusiness in Borno State.*

Keywords: *: Insurgency, Agriculture, Borno State, Boko Haram, Nigeria*
(JEL Classification: *Q10, Q18, Q12*)

INTRODUCTION

The emergence of insurgency in Northern Nigeria dates back to 2009 when an Islamic group popularly known as Boko Haram turned violent. Earlier on, the group which was formed in 2002 had conducted its affairs in a peaceful manner, although with the aim to propagate the creation of an Islamic state where sharia laws apply. In 2009, however, the group rebelled against the order of the Nigerian government with their refusal to wear helmets which was a newly imposed order. This resulted in a clash between the police and the Boko Haram members with about 700 recorded deaths inclusive of the founder and then leader of the Islamic sect, Mohammed Yusuf.

A new leader came on board afterwards and made the sect a violent one such that by 2014, more than 13,000 deaths resulted from years of insurgency and counter insurgency operations in Northern Nigeria since 2009 (ACAPS, 2015). Majorly affected states include Adamawa,Borno, and Yobe, all from northeastern Nigeria. Boko Haram violence heated up in 2014 with about 7,711 deaths occurring in 2014, with a number of cities in Borno, Yobe and Adamawa states taken over by the group (ACAPS, 2014). In Borno states alone, Boko Haram controlled between 40 – 70% of the state (ACAPS, 2014). The continued violence in the Northeast has indirectly affected the entire population of 24.5million people from Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states.

Approximately 1.9 million people have been displaced and over 4.8 million people are experiencing crisis majorly in terms of food security (ACAPS, 2015).

The impact of the crisis is multidimensional among which is food, shelter, livelihoods, health, security and education. Extremely high price of foods and its limited availability has been the major challenge to food security since the start of insurgency. Insecurity at the markets, the inability of farmers to cultivate and high cost of transportation to affected areas are some factors that account for the high prices of foods and its limited availability. Prices of cereals in northeastern markets were between 74 per cent– 120 per cent higher in January 2017 in comparison with the past two years average price level (FEWS-NET, 2017).OCHA 2017 report identifies about 5.1 million people are food insecure. Homes were destroyed as several villages were burnt down and livelihoods destroyed due to inability of farmers to cultivate their lands and recurrent stealing of livestock. This has led to increase in poverty rate in the northeast from 47.3 per cent in 2011, to 50.4 percent in 2013 (World Bank, 2015). Specifically, 2.3 million people are in need of assistance with regards to shelter and non-food items (OCHA, 2017).

Since the start of the crisis, availability of healthcare services have substantially reduced; reasons include unavailability of healthcare workers, poor living conditions with millions of people hosted in camps, increased malnutrition, and destruction of healthcare facilities by boko haram.As of February 2017, one-third of the 749 health facilities in Borno state have been completely destroyed and another one-third damaged by the insurgency (WHO, 2017). The on-going insurgency has led to insecurity of civilians due to continuous killing of individuals, destruction of properties, and control of cities by boko haram thus resulting largely in migration of people from the region,which exposes them to exploitation, trafficking, sexual abuse and forced labour. More than 1.5 million people have fled their homes due to the violence (UNICEF, 2015).The education sector also has its share of the negative impact of the insurgency. Boko haram burnt down several schools thus made education inaccessible for children, displacement of teachers and unavailability of teaching materials. According to UNICEF 2015, more than 300 schools have been severely damaged or destroyed and at least 196 teachers and 314 school children were killed in the period between January 2012 and December 2014.

Of the three key states continuously attacked by Boko Haram activities, Borno state is the most affected. According to World Bank 2015, two thirds of damages in terms of deaths, destroyed homes, farmlands and infrastructure arising from insurgency occurred in Borno state which is estimated to about US$ 5.9 billion for Borno,with Adamawa and Yobe estimated to US$ 1.6 billion and US$ 1.2 billion respectively.Three-quarters of the overall damages are on agriculture (US$ 3.5 billion) and housing(US$ 3.3 billion). As a result this study examines the direct impact of Boko Haram activities on agriculture in Borno state.

MATERIALS AND METHODS

Emergence of Terrorism in North East Nigeria

Nigeria have been affected by series of terrorist groups since its independence in 1960, however the most prominent of them and most relevant to this study is Boko Haram. Boko Haram is a radical Islamic Sect with a Hausa term meaning Western Education is forbidden. Although, the group is officially known asJamaátulAhlisSunnahLidda'watiwal Jihad meaning 'people committed to the propagation of the Prophet's teaching and Jihad'. The group has been active in Nigeria since 2009 with series of attacks on human lives and properties mostly in the north eastern part of the country and pockets of attack in the central region. The motive behind its formation and the extent of its operation is best understood within the demographics ofNigeria.

Nigeria comprises of hundreds ofethnic groups, although the three largest ethnic groups of Hausa-Fulani, Yoruba and Igbo represent about 71% of the Nigerian population.Nigeria is almost equally divided between Christianity and Islam with larger percentage ofMuslims concentrated in the northern, central and south-western zones of the country, while the Christian counterpart dominate the south-east and south-south regions, with few states in the central region such as Plateau and Benue states. The Nigerian economy has always been a developing economy with GDP per capita in 2010 as $2,396 and 2017 an estimate of 2,695 while an advanced country like the United Kingdom had $38,665 in 2010 and an estimate of $49,104 for 2017 (IMF Data, accessed 2017). Thus, in 2015 about 53.5 percent (The World Bank, 2017) of the Nigerian population lives below the income poverty line of PPP $1.90 per day despite her wealth of petroleum resources, that is,Nigeriabeing Africa's biggest oil producer, pumping more than two million barrelsof crude oilper day. Prominent among the factors affecting the growth of the economy is corruption which prevents the development of appropriate infrastructural facilities, stunt the growth of firms and industries in line with it high population growth rate has results in high unemployment and underemployment and consequently resulted in high poverty rate. The high poverty rate cut across all regions of the country North, South, East and West. However, the Northern region has the largest rate in the country.

The analysis of poverty in Nigeria reveals the north is most affected. The percentage of the population in the north-east and north west regions living below the income poverty line of PPP $1.90 per day is putat 79% which exceeds the national average of 53.5% (OPHI, 2017).The region's high poverty rate arises out of inadequate economic opportunities for the burgeoning population, cultural and religious practices that influences their level of education and wealth creation especially for women, widening income inequality, and corruption (Ngbea and Achunike (2014), Akubor (2016)).

The current insecurity challenges of Boko Haram bedeviling the northern region of Nigeria has been considered by studies as emanating from two factors: the high poverty

rate observed in the region and the fact that northerners are mostly Muslims (Itulua-Abumere (2016), Akinola (2015), Shuaibu and Salleh (2015), CFC (2013)).By extension, some studies attribute the cause of Boko Haram as the result of weakness in the institution of politics and security services whereby issued threats by a group of aggrieved individuals to control politics are ignoredand thus results in violence (Walker (2012), Barna (2014), Mbah et al (2017)).With regards to poverty and conflict, there is a direct relationship between these two as the existence of conflict and insecurity aids poverty and with increasing poverty comes conflict. In the case of Northern Nigeria, high rate poverty created a vibrant ground for the growth of Boko Haram.

Several studies relateBoko Haram to have been created in 2002 by Mohammed Yusuf (1970 – 2009), a radical Islamist Cleric in Maiduguri, Borno state. He created an Islamic school where poor Muslim parents are able to send their children to acquire knowledge. However, being an Islamic cleric with radical views, his ulterior motive for the school is to propagate the creation of an Islamic state with the use of sharia laws (Chothia, 2012). The fact that northern Nigeria is Muslim dominated accounts for his ulterior motive. Although Islamic Sharia law was adopted in Borno state and across the northern states in the 1990s, the cleric desired for strict application of sharia law in the state. He deeply opposed any Western form of democracy and cited the education system which was implemented by the Christian British colonial rulers as the cause of corruption and social ills which pervades the Nigerian society. Hence, the school soon became a recruiting ground for future jihadist (Islamic fighters) which was in no way a difficult task due to the high level of poverty in the state. He gathered like-minded individuals who are aggrieved about the economic condition of the state of poor governance and corruption, hence desired for the Islamic laws as the only option for a moral upright society and economically vibrant state. In addition, ragged boys popularly known as Almajiriwho roam about the streetalso became members of the group as they were admitted to acquire Islamic education. Although at the initial stage the group was peaceful in conducting it affairs and thus he successfully gained huge followership comprising of youths majorly from poor families. Later on, the membership of the group extended to neighbouring countries of Chad and Niger Republic. At the same time, Yusuf extended his base from just Borno state to other Northern states such as Bauchi, Gombe, Kano, Kastina, and Yobe establishing small camps and schools all over.

The peaceful phase of Boko Haram activities ended in 2009 when Boko Haram had a direct confrontation with the Nigerian Police. Then Nigeria just passed a law mandating the wearing of motorcycle helmets by all motorcyclists, however, Boko Haram members outrightly refused to wear their helmets during one of their outings and this infuriated the Nigerian police who are to implement the law on behalf of the government (Forest, 2012). During this confrontation 17 members of the Boko Haram members were shot dead and the group retaliated few days later by attacking police stations, schools, prison, police barracks and churches in Borno and Bauchi states(Perouse De Montclos, 2014). The Nigeria government deployed Nigerian army to assist the overwhelmed police forces to bring back peace and orderliness. In response, the leader of the group – Yusuf – was arrested alongside some other sect members who were publicly executed outside a police station in Maiduguri, Borno state. This led to the transition of the group from the peaceful state to violent state.

New leaders for the group emerged withImam AbubakarShekau as the spiritual leader andKabiruAbubakarDikko Umar, alias "KabiruSokoto" as the operational commander (Perouse De Montclos, 2014), who acted in more violent manner than the initiator of the group – Muhammed Yusuf. The group became sophisticated in their operations, from the use of machetes and small arms, but later moved on to the use of guns and improvised explosive devices. Their attacks also spread from just Borno and Bauchi states to other Northern states of Kano, Katsina, Plateau, Yobe, Taraba, Adamawa, Gombe and the country's capital Abuja. In addition, terrorist violence worsened with attacks spilling over to neighbouring countries like Chad, Niger and Cameroon. In Nigeria, Boko haram activities greatly affected the socio economic activities of these states.

Boko Haram attacks active between 2009-2017, hundreds of people were killed and billion Naira worth of properties were destroyed including buildings, schools, markets and offices, which paralysed socioeconomic activities in some states as residents flee for their safety. By the end of year 2014, more than twenty towns and villages majorly from Adamawa, Yobe and Bornostates were under the control of the boko haram militants. The Northern part of Nigeria is well known for agricultural activities and the presence of Boko Haram militancy has impacted on the agricultural business and causing food insecurity. This research concentrates on Borno state and as such review studies in that direction.

AGRICULTURAL BUSINESS AND INSURGENCY IN BORNO STATE

Borno state is located in the North eastern part of Nigeria, bordered by three Nigerian states and three countries.Borno state shares borders with the Republics of Niger to the North, Chad to the North-East and Cameroun to the East. Within Nigeria, itis bordered with Adamawa State to the South, Gombe State to the West and Yobe State to the North-West.

It occupies 70,898sq km which makes it the second largest states in Nigeria in terms of area. It has 27 local government areas with several ethnic groups. The Kanuri group is the dominant ethnic group and Maiduguri is the capital of the state. Farming is the mainstay of the people of Bornostate with occupation in crop production, livestock production and fish farming. The major crops cultivated in the State are millet, sorghum, maize, groundnut, wheat, cowpea, soybeans and vegetables such as onions, pepper, tomatoes, garden eggs and leafy vegetables. Also they are well knownfor fishing significantly around Lake Chad. Major livestock reared in the State are cattle, camel, sheep and goats.Borno state trades its agricultural produce both within and outside Nigeria. Given

its international boundaries, there exist a healthy relationship between the state and her neighboring countries for trading not only in agricultural produce but also in manufactured goods, trade in craft and craft products since the pre-colonial era.From this era through to the post-colonial period, the development of trade and commerce in Borno have given the region its popularity and importance such that by the end of 1916, there were about eight European and Levantine firms in the region (Balami, 2009).In addition the need to meet the demands of the foreign firms propelled production in trade items like ground nut, cotton and gum.Furthermore, the fact that the Borno region and its immediate neighbors from other countries have similar features in terms of language, religion and cultural belief further facilitates trade relations. Also, the presence of unequal resource endowment at one point or the other for the bornoregion and its neighbors indicates the strength of their trading relations. For instance, during the Nigeria civil war, this trade relations was relied upon for supplies and a similar gesture was repaid during the Chad civil war (Balami, 2009). It is observed that unrecorded transnational trading activities in Borno state amounts to nearly 95% of total transborder trading activity with about 5 different trading routes (Balami, 2009).Borno state serves as the channel for the exchange of both raw agricultural produces and manufactured goods, thus creating employment opportunities for its residents and of course a source economic growth for the region. However, this growth has been greatly affected by the activities of Boko Haram since its first attack in 2009.

Due to the insurgency, large hectares of farmland were destroyed, markets were burnt down, emigration of people from affected area meant cultivation of farmland, animal rearing as well as fishing were abandoned, theimposition of curfew for days meant the restriction of business activities and the closing of international frontiers within the region limited crossborder trade. Socioeconomic activities dropped drastically, as most of the regions were under the control of theinsurgents, educational system was grounded with public schools burnt down. The health sector was not left out with primary health care centers burnt down and physicians recruited by the insurgents for their personal use. By 2016, conditions started to improve due to the change of Nigerian government who was able to tackle the Boko Haram menace head-on. However, 7 years of continuous attacks in the northern region has left so much damage. According to the World Bank report (2016), an estimate of about 20,000 citizens have been killed in Borno state during the violence, more than 2.0million people were displaced, 956,453 (nearly 30 percent) out of 3,232,308 private houses were destroyed, 5,335 classrooms damaged across primary, secondary and tertiary institutions. In addition, 1,205 municipal, local government or ministry buildings, 76 police stations, 35 electricity offices, 14 prison buildings, 201 health centres, 1,630 water sources, 726 power sub-stations and distribution lines (World Bank, 2016). It is also estimated that parks, game, forest and grazing reserves, orchards, river basins and lakes have been poisoned in 16 of the 27 areas, and 470,000 livestock killed or stolen (World Bank, 2016). The total cost of damage was put at $5.9 billion.

Studies on the impact of Boko Haram activities in Nigeria are concentrated on the effect of insurgency on food security basically due to the challenges of the affected individuals to meet their basic food needs. In Awodola and Oboshi (2015), the impact of the activities of Boko Haram on the food security in Maiduguri, the capital of Borno state is examined. Using fieldwork data for the period of 2012-2013 from 222 respondents, they find that foreign business individuals deserted their businesses, virtually all businesses and markets in Borno state has collapsed completely, the most affected sector is the agricultural sector with high cost of farm produce. In a similar study byMohammed and Ahmed(2015), the impact of Boko Haram insurgency in Borno state is examined using both primary and secondary data. Primary data are generated from 300 respondents. Study reveals that prior to insurgency, annual grain flow between Borno and her trade partners was 294940 tons, however flow of grain decrease to 94,500 tons by 2nd quarters of 2014. In addition, all traditional trade routes were no longer available.The report by AGI (2014), the impact of conflict in Northern Nigeria on Agricultural Value chains is examined for Borno state. 4 value chains are concentrated upon with 4 respondents who are all farmers and experienced the conflict in its entirety. For the crop value chain, a substantial decline is observed in the average production of major crops like rice, millet, maize, cowpea. In addition, the amount of fish harvested during the period dropped drastically by almost 80%. For livestock production, inability to access markets led to high cost of livestock. Lastly, the agriculture related value chain experienced a negative impact as investors' confidence dropped and less investment in agricultural project is observed for areas most affected by Boko Haram activities.

On the international scale, recent studies have found adverse effect of terrorism and insurgency on agricultural and economic development of nations including Burundi, Colombia, India and Iraq. Singh (2012) focuses on Punjabi farmers' labor-related decisions in the face of insurgent violence. This insurgency emanated out of the demand for a Sikh-dominated Punjabi-speaking independent state, to be called Khalistan, which the government of India refused to grant hence resulting in violence since which is focused on India's government and its representative. Using micro-level farmer expenditure surveys for the period 1981-1993 to focus on the monetary amount spent by farmers on twotypes of hired labour, permanent and casual labour and how it relates to insurgency related violence. It is found that insurgency-related violence adverselyaffected farmstead spending on permanent, but not temporary hiring basically because workers wanted short duration contracts. Although this effect was not generalized for the entire households surveyed as it was found only for the richer half of the surveyed households. In a related study in Singh (2011), the presence of major terrorist incidents in the district of Punjab is found to reduce long term fixed investment in agriculture by as much as 17% in a year.

Grun (2008) examine the impact of 2 kinds of violence endemic in Colombia, guerrilla warfare and common delinquency households portfolio to invest in fixed assets or

mobile assets. Using a survey of 11,500 households it finds that fixed asset investment in fixed assets would go down to the benefit of it mobile counterparts in the presence of guerrilla and paramilitaria because they cannot be carried away in case of displacements. However, thereverse is the case in the presence of common delinquency. In Guerrero-Serdan (2009), wave of violence and turmoil thatstarted in Iraq since 2003 is seen to have profound effects on the nutritional outcomes of children, as children born in areas with high levels of violence are shorter than children born in low violence areas. In Peru, Leon (2009) finds a negative impact of Peruvian civil conflict on human capital accumulation for children exposed to the conflict. The Peruvian conflict is an internal conflict in Peru between the government and several terrorists groups starting in 1980 and still on going. The negative impact observed exist both in the short run and long run. A similar conclusion was reached by Chamarbagwala and Moran (2008), who finds strong negative impact of the civil war in Guatemala on female education for girls exposed to the war than for those not exposed.Bundervoet et al (2009) examined the impact of Burundi's civil war on health status of children exposed to the war and finds that children exposed to war during early childhood are negatively affected. This effect is seen to grow stronger the longer the child is exposed to the war.

In general, the studies reviewed show that civil conflict vis a vis insurgency and terrorist related violence do have impact on income level, health outcomes, educational attainment, agricultural development among other sectors. Hence as a result, this study aims to examine the impact of insurgency activities of Boko haram in Nigeria onagricultural development on Borno state. It tries to examine the immediate adverse effect on agricultural activities of insurgency.

RESULTS AND DISCUSSION

Five data sets are used in the analysis: annual insurgency related killings, value of loan received by farmers, annual rainfall, annual area cultivated, and annual crop production. Data obtained relates specifically to Borno state on an annual basis for the time period 1998 – 2015, although data on insurgency related killings begins in 2009. The data on annual insurgency related killings was obtained from the Global Terrorism Database (GTD) maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START, 2017). The value of loan received by farmers and annual rainfall were extracted from the Central Bank of Nigeria Statistical Bulletin 2016 and annual crop production and area cultivated were both obtained from National Bureau of Statistics yearly agricultural reports.

The empirical specification is as follows:

$$AC_t = \beta_1 + \beta_2(INS)_t + \beta_3(LOAN)_t + \beta_4(RAIN)_t + \varepsilon_t \quad (1)$$

$$CP_t = \alpha_1 + \alpha_2(INS)_t + \alpha_3(LOAN)_t + \alpha_4(RAIN)_t + \gamma_t \quad (2)$$

Where

- AC is the annual area cultivated for farming in Borno state
- CP represents the annual crop production in tons for 7 crops including cassava, cotton, garlic, ginger, shea-nut, sesame seed and gum arabic.
- INS represents the total number of fatalities in insurgency related activities.
- LOAN represents the value of annual loan (in Naira) received by farmers.
- RAIN is the annual level of rainfall recorded in millimeters.

Singh (2011) and Singh (2012) are followed very closely in the design of the models above. Here the 2 equations are estimated in which equation 1 analyses the relationship between farm area cultivated and number of killings in insurgency related activities after controlling for other factors such as value of loan and amount of rainfall which has the tendency to influence the farm area cultivated. Hence the coefficient of interest here is □_2, for which if positive indicates insurgency has a positive impact on agriculture and if □_2 is found negative then there is a negative relationship between the insurgency and agribusiness. Equation 2, on the other hand, analysis the relationship between crop production and number of killings in insurgency related activities after controlling for other factors as done in equation 1. Again, the focus is on □_2 which we expect to have a negative sign indicating that crop production is negatively affected by insurgency in Borno state. The summary statistics for the data is shown in table 1.

Table 1: Summary Statistics

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
AC	18	20,566.67	11.061.97	5260.00	54500.00
LOAN	18	67,334.83	56092.45	854.00	194,570.00
RAIN	18	643.25	138.00	393.00	917.30
INS	18	696	1591	0	5529
CP	18	50261.11	34,919.55	3340.00	129700.00

Source: Authors computation from data

Table 2: Effect of terrorism on agribusiness in Borno state

	(1)	(2)
	AC	CP
INS	-0.753	-10.047**
	(1.456)	(4.846)
LOAN	0.109**	57.431
	(0.045)	(60.767)
RAIN	44.608**	-0.111
	(18.262)	(0.148)
Observations	18	18
R^2	0.418	0.342

****indicates results significant at p-value <1% and ** signifies results significant at p-value < 5%***

Source: Authors compilation from data.

Table 2 displays the results for the two models. Results for model 1 is shown in column 2 of the table which identifies a negative relation between killings related to insurgency and the hectares of land cultivated in Borno state with the other two variables in the model with a positive relationship. The signs in terms of positivity or negativity for the three variables in model 1 reveal results which are very much expected. That is area cultivated increases with increase in rainfall and increase in the value of loan available to farmers. However, area cultivated decreases with increase in the number of insurgency related killings. A similar result is obtained for model 2 with the exception of rainfall. Model 2 indicates that the amount of crop produced decreases with increase in the number of insurgency related deaths. Although results for area cultivated and insurgency is not significant, the relation between crop production and insurgency is statistically significant at 5%. The R-squared for the two models is quite low with value less than 50%. The major challenge here is the limited number of independent variables present in the models, which occurred due to unavailability of data. This is discussed in detail in the last section.

Table 3: Correlation Matrix for Model Variables

	AC	LOAN	RAIN	CP	INS
AC	1.000000	-	-	-	-
LOAN	0.340793	1.000000	-	-	-
RAIN	0.350044	-0.398302	1.000000	-	-
CP	0.093218	-0.237470	0.359885	1.000000	-
INS	-0.221240	-0.067805	-0.135375	-0.476447	1.000000

Source: Authors compilation from data

From the correlation matrix displayed above, the relationship between crop production and insurgency on the one hand and area cultivated and insurgency on the other hand are both negative, however, a stronger relation exists for insurgency killings and amount of crops produced in comparison with the other relationship.

In conclusion, this study examines the relation between agribusiness and insurgency in Borno statefor the period 1998 - 2015. Agribusiness in this case is classified into 4 groups. That is, the amount of area cultivated, annual crop production, rearing of livestock and fish farming which are major agricultural activities residents of Borno state are engaged. Due to limited availability of data for analysis, the livestock rearing and fish farming were dropped, with this study focusing on area cultivated and total crop production. Among other factors that may influence agriculture is the availability of loan and favorable weather conditions hence the reason for their inclusion in the models estimated. Results for the two models indicate the presence of insurgency influence agribusiness negatively in Borno state.

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REVIEW PAPER

PUBLIC WORK – AN INTERNATIONAL OUTLOOK

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Abstract: *Labour market policy includes active and passive labour market programmes, aiming to solve different problems. Active labour market programmes assist the unemployed to find jobs and thus return to the labour market. Passive labour market programmes assist the unemployed by providing various kinds of aid, easing social tensions. Public work can be considered to be an active labour market programme, assisting people who receive social care with income based on public beneficial work. Consequently, public work is justified by some on the basis that it is purported to have some kind of moral foundation, as well as because it supposedly shows results within a short time. Yet, the rationale behind using public work programmes to fight unemployment is contested. Detractors see them as being rather costly, questioning their success and arguing that their overall results are uncertain, especially in the long run. In short, there are in fact pros and cons to using public work, with opinions being rather divisive. This study summarises these pros and cons, analysing the relevant international and Hungarian literatures in the context of active labour market programmes.*

Keywords: *: Active Labour Market Programmes, Public Work, Labour Market, Unemployment, Workfare*
(JEL Classification: *I38*)

INTRODUCTION

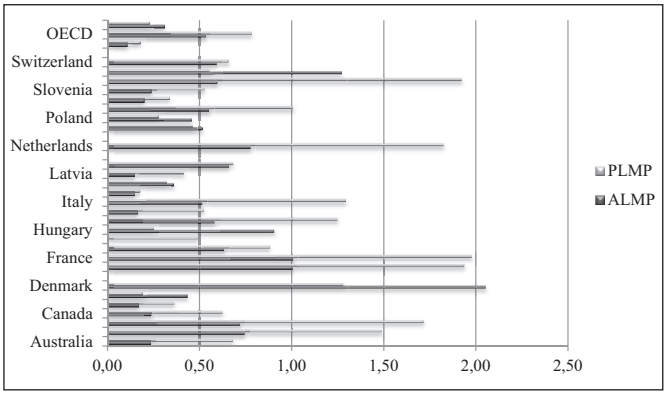
The transition period from the centralised redistributive economic system to the market economy between 1989-1991 in the Central and Eastern European countries (post-socialist countries) has been accompanied by a deep crisis which lasted until the autumn of 1993. This recession was much more complex than those common for the declining phase of the economic cycles of capitalist systems, since it cannot be considered as a result of overproduction. It more likely can be traced back to the structural change in the political and economic systems. After the transition period, the full employment of socialist ideology, which had existing for decades, ceased in each country. This change was one of the greatest challenges to the introduction of the market economy. The new structure of employment in these countries was less than ideal for the new economic mechanisms, and this disparity has led to the permanent lack of job opportunities in these countries ever since. Considerable differences have appeared among regions after the massive disappearance of jobs, e.g. in the mining industry. Because the state no longer guaranteed full employment by law, labour demand considerably decreased, exacerbating unemployment further, as the labour market underwent the inevitable restructuring throughout the 1990s and beyond. Active labour market programmes were introduced to manage the balance deficit in the labour market (Csehné et al., 2009).

SPECIALTIES OF ACTIVE LABOUR MARKET PROGRAMMES

The OECD defines active labour market programmes as follows: These programmes include all social expenditure (other than education) which is aimed at the improvement of the beneficiaries' prospect of finding gainful employment or to otherwise increase their earnings capacity. Active labour market programmes help increasing the labour market flexibility during economic changes. The aim of active labour market programmes (labour market services and aids promoting employment) is to help the unemployed return to employment as fast as possible. Expenditures (% of GDP) in active labour market programmes of OECD countries

show considerable differences (Figure 1). The more than 2 percentage of GDP in Denmark has been followed by the other Scandinavian countries (1-1.5 percentage of GDP), while the United States, Japan, and the Balkan countries (0.1 percentage of GDP) can be found among those countries investing the least. Hungary, with its 0.8 percentage of GDP, can be found in the first third.

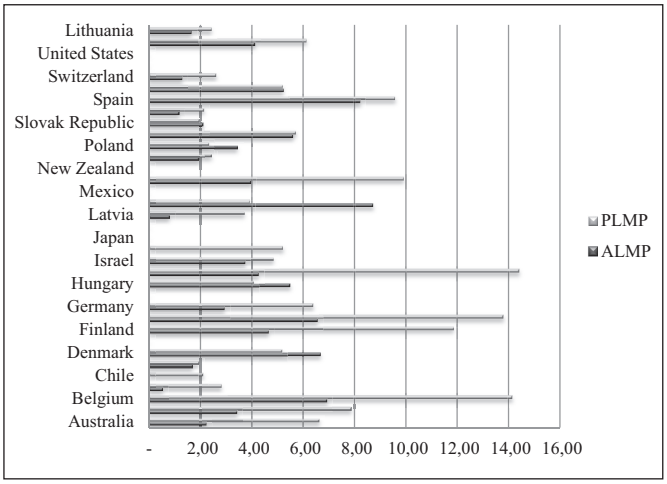
Figure 1: Public expenditure in active (ALMP) and passive (PLMP) labour market programmes in OECD countries in 2016 (GDP %)



Source: OECD (2016), own editing

Regarding the participant stocks in active labour market programmes (Figure 2), Luxemburg and Spain are the leaders (more than 8 percent of the labour benefits the programmes), while Hungary (5.5 percent), together with Portugal and Sweden, can be found in the first third.

Figure 2: Participant stocks in labour market programmes in OECD countries by category, 2016 (%)



Source: OECD (2016), own editing

Within the active labour market programmes, in 2016, Hungary (0.52 as a percentage of GDP) is the leader in spending on direct job creating public work programmes, followed by Ireland (0.27 as a percentage of GDP), Bulgaria (0,15 as a percentage of GDP) and France (0.14 as a percentage of GDP). The expenditures of Slovenia, Lithuania, Latvia are relatively high (0.07-0.14 as a percentage of GDP). Significant public work programmes are operating in these countries, as well as in Greece.

Based on international experiences, among the active labour market programmes, the more personalised and targeted programmes have more chance to access real results (Martin - Grubb, 2001; Crépon - Van den Berg, 2016). While personal counselling, assistance in job-search, job placement, income subsidisation (roughly in this order) can be effective, public work programmes could be unsuccessful regarding further employment and salary. The effectiveness of training programmes is variable although they are rather expensive (Brown – Koettl, 2015; McKenzie, 2017; Schmidt et al., 2017). After analysing the active measures of the big labour market reform in the 1990s, in Sweden, it has been revealed that job creating programmes can be effective, as they precisely imitate the situation of real employment (Heikkilä et al., 2002; Albæk et al. 2014).

Assessment of the effectiveness of active labour market programmes was carried out first in 1992-1993 in Hungary, within the ILO Japan Programme (Godfrey–Lázár–O'Leary, 1993). Since that time, the monitoring system developed for this purpose has been measuring the cumulated effects of completed labour market programmes. Generally, it can be stated that people receiving active support earlier more likely become members of the supported group again in the second half of the observed period than those belonging to the control group (Csoba - Nagy, 2011).

SPECIALITIES OF PUBLIC WORK PROGRAMMES

Of the active labour market programmes, public work is one of the oldest programmes and the second most active programme affecting the most people on the Hungarian labour market. Public work has always appeared in Central and Eastern Europe since 1990, whenever economic and employment structures have undergone new changes, because the balance between the labour market demand and supply was broken, generating income shortage and thus necessitating central intervention.

From an ideological point of view, public work can be found in the intersection of two trends. On the basis of the classical approach, it can be considered to be a measure of social policy. From a neoconservative or neoliberal point of view, it is considered to be something akin to being a criminal policy, since through such programmes, the state forces individuals to adopt a mandated way of life (Szabó, 2013).

Several examples prove that large government and council level investments have been carried out by public work. In these cases, public work is not considered as a labour market programme, but as a way through which a certain state or community goal can be reached, although it is functioning as a labour market measure, as well. The American New Deal programme was a response to the Great Depression between 1929-1933. As a result of the Great Depression, masses of people became unemployed, thus the aim of the programme was to provide these unemployed people with jobs and thereby rebooting economic development. The state generated supplementary demand and tried to lower the depth of crisis

through infrastructural investments, thus providing the private sphere, companies and employees with income (Smith, 2006).

Public work is a forced labour programme set by the state in the 2000s in Europe. A person who is not able to find a job after receiving unemployment benefits can receive a lower sum as a benefit and has to accept the job offered by the state (Csoba, 2010). Only 10 percent of people participating in public work programmes return back to the legal labour market, while this ratio is two times higher among those not attending such programmes. A job requires a regular way of life; the days spent with work are really important in preserving intellectual and physical abilities, although it is doubtful whether constraint can neutralize positive outputs (Szabó, 2013).

The concept of workfare can be found behind public work programmes. There are hot professional debates whether public work is primarily a "constraint and work test" or a kind of corridor to labour market.

One of the aims of workfare programmes is to respond to labour market changes through "active" labour market programmes targeting unemployed people receiving social benefits. Basically, these programmes include measures on the demand-side (job creation, income subsidisation) and on the supply-side (supporting flexibility and the mobility of labour force) at the same time, in order to reduce unemployment (French, British, American examples). In some countries, this measure is more frequently applied for those who have more difficulties with finding a job. For them, some parts of the programme (Danish, Dutch, British, Californian programme) ensure the potential of "education and training" or "social activation". Moreover, the Danish, Dutch, British and American programmes involve "case management" as well, in order to fit the programme to the client. Out of these four programmes, the Danish activation strategy puts more emphasis on long run strategy and human resource development, while mostly the American programmes focus on the earliest labour market participation (Besley - Coate, 1992; Eardley et al., 1996; Grover - Stewart, 1999; Brown – Koettl, 2015; Murgai et al., 2015).

Workfare measures focus on reducing the number of benefit recipients in two ways. First, they "select" and exclude those who are working (and receive the benefit unlawfully), or those who are not seeking for a job at all (although it is the prerequisite to be benefit eligible). Through the filtering effect of the programme, the requirements attract only the really needy people, keep away wealthier ones, thus consequently can reduce state administrative expenditures. If the requirements cause such inconveniences (frequent visits to labour centres, compulsory work or even training, etc.) that can lead to the earliest leaving from unemployment status or avoiding having to accept benefits; and the work requested to be done is considerably to be more than eligible people generally would work without intervention, the deterrent effect of the programme will prevail (Kálmán, 2015). Furthermore, they force people to such situations where they can improve their human capital and their chance to get a job. "Workfare" involves such programmes and approaches which are built on the different combinations of these two mechanisms (Heikkilä et al., 2002).

In developed countries, mainly as a response to a certain short term economic crisis, are such programmes applied or - in cases of high unemployment and typically for a short time period - lead the unemployed back to the labour market. In developing countries, they are concentrated in the most disadvantageous settlements, and therefore are already a kind of selection. Also, the offered public work wages are generally lower than the market wages of poor people. Public work programmes provide only few breakout options for cumulatively disadvantaged people (Wulfgramm, 2014; Zieliński, 2015; Douarin - Mickiewicz, 2017).

Public work is increasingly applied in developing countries in poverty reduction as a transition to guaranteed employment, or even self-employment, like in Argentina, Ethiopia and India (Adimassu et al., 2015; Shah – Steinberg, 2015; Ismail, 2016; Rosas - Sabarwal, 2016; Mourelo - Escudero, 2017). The Indian "National Rural Employment Guarantee Act" (NREGA) (later renamed as the „Mahatma Gandhi National Rural Employment Guarantee Act" (MGNREGA)) provides at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work instead of the unemployment benefit of the Western model. The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) programme affecting 54 million households contributed to the reduction of poverty also by indirectly since in those places where many people were affected, agricultural wages increased. Argentina (Programa Intensivo; Trabao, Programa Trabajar; Programa Jefes de Hogar) has been affected since its severe economic situation (1992), where agricultural enterprise development programmes were supported (e.g. irrigation systems development) or there were examples for direct agricultural production through community gardens, as well. Irrigation system development was carried out in small farms lead by a clearly defined social group – needy women – in Ethiopia (Ronconi et al., 2006; Ravi - Engler, 2015). Public work programmes are facing similar problems both on a national (Hungary) and international level.

Based on a quick European analysis, it can be stated that the volume of public work is outstanding in Europe. Public employment was regulated by the Act IV of 1991 after the transition period in Hungary. In the Act, public employment appeared as the synonym of unemployment, a compulsive solution to temporarily ensure the labour market reintegration of unemployed, helping those people who are not able to find job beyond their own fault. There were two declared functions of public employment: firstly, the so-called work test, meaning that if someone refused public employment, the individual was consequently excluded from being registered as being unemployed, secondly providing participants with normal, not subsidised jobs (Galasi – Nagy, 2008).

The work carried out within the framework of public employment intended to develop the social, health prevention, educational, cultural, law and order and transport situation of settlements. Public employment provides social insurance, eligibility to old-age pension and job search service and ensures access and re-access to the primary labour market.

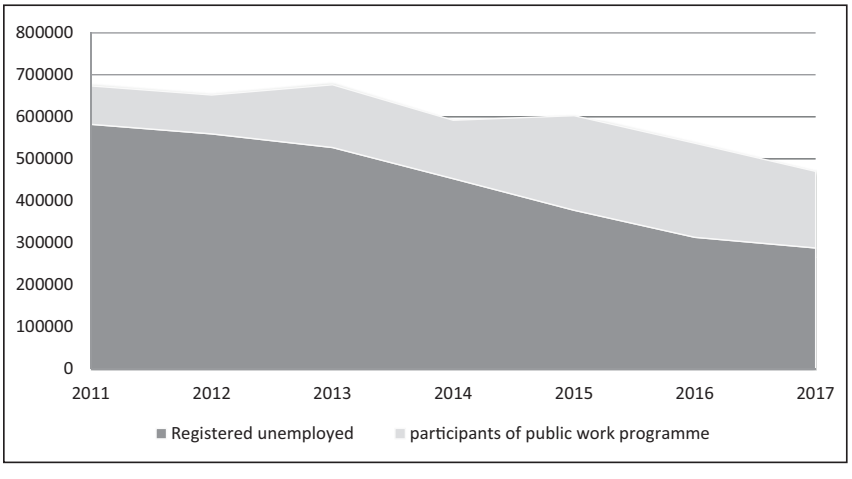
Public employer can be: local government, budgetary body, church, civil association, social cooperative.

The system of public employment has been changed several times after 1990 in Hungary. The following institutions existed: public benefit employment between 1987-2010, public work programmes between 1996-2010, public aimed work between 1999-2010. There was a considerable change in 2011, since the different forms of public employment created after the transition period has been replaced by the "uniform system of public employment" (Szabó, 2013; Bördős, 2015). In the heart of these changes, the "work instead of aid" concept can be found. Since that time, the public benefit employment, public work programmes and public aimed work are not existing, they have been replaced by the uniform system of public employment since 1 September 2011 (Bankó, 2015).

The Hungarian public employment programmes serve three goals: social, employment and political. The social goal is to provide long term unemployed people with higher income. The employment goal is to improve the work abilities of participants and hereby leading them back to the primary labour market. It was not a secret goal to reduce illegal work, i.e. employing individuals without reporting them to the requisite authorities and therefore avoiding payment of social contributions or taxes after income. The political goal was to provide support locally and to ease local social tensions.

An average of 30,000-40,000 people were involved in any form of public employment between 1996 and 2006 in Hungary. This number has increased to 60,000-100,000 since 2009, and has exceeded 130,000 in 2013. The envisaged numbers are 190,000 in 2018, 170,000 in 2019 and 150,000 in 2020 (Figure 3). These figures can be considered high, even in international comparison (http://kozfoglalkoztatas.kormany.hu/).

Figure 3: Number of unemployed and participants of public work programme



Source: NFSZ, own editing

In the current system, monthly an average of 200-220,000 and yearly an average of 355,000 public employees are involved in the programme. The distribution of affected people is rather unequal, considering the regional distribution of unemployment (the higher the unemployment, the more people are involved in public employment) (Cseh Papp, Csapóné Riskó, 2014).

Regarding the diversity of employers we can find mainly non-profit, construction work and clerical organisations. "NMI Művelődési Intézet Nonprofit Közhasznú Kft" (non-profit) was the largest national public employer in 2017 with 2589 public employees, followed by "Magyar Református Szeretetszolgálat" (church) (1959) and "Magyar Közút Nonprofit Zrt." (road construction) (1928 people). They were followed by various regional water management authorities (1200-1700 public employees), "Országos Széchenyi Könyvtár" (public library) (1140) and "Magyar Államvasutak Zrt." (Hungarian railways) (1060). Local governments were also common on the list of public employers.

The most common positions are the following: conveyor, gardener, cleaner, street-sweeper, garbage picker, agricultural auxiliary worker, office assistant and document manager. The latter positions require higher qualifications and are available for graduates.

Regarding the branches of the economy, the number of public employees is highly overrepresented in agriculture (26605). It is a promising tendency that in the previous 2-3 years, the number of public employment programmes built on local specialities has remarkably increased (14248), with the second highest number of public employees working in the maintenance of local roads (9834) and in inland water management (7257).

The goal of the government in 2018 was to reduce the monthly average maximum number of public employees to 150,000 by 2020. It is a change that people under the of 25 and with qualifications can only be involved in the programme if the labour mediation initiation of the authority failed three times because of the employer or the authority cannot provide a proper job within a three month period. The government tries to provide income to those youth who are under the age 25 and thereby exclude them from the public employment programme with jobs offered within the framework of the "Ifjúsági Garancia Program" (Guaranteeing Youth Programme), financed by the European Union. The figures prove that by 2017, the number of youth under the age of 25 has decreased to 19,000 in the public employment programme which is less by 6,000 in comparison with the previous year. It is a further goal that starting from June 2018, no one should be a public employee for more than 1 year within a three year time period, except in cases in which the private sector does not offer the individual a proper job. It is not easy to escape from the public employment programme, since it is not allowed to search for jobs when involved. The new government decision makes it possible to cover the job-search related expenses of public employees (Márk, 2017).

RESULTS AND DISCUSSION

The available efficiency tests evenly prove that public employment programmes are the best in testing the willingness to work and the compulsory nature of the programme here is the most characteristic among all the active labour market programmes.

Analysing the efficiency of the public employment programme in Hungary (Aladi - Kulinyi, 2014), the so-called "deadweight-loss" has been revealed, meaning that one part of the participants could have found a job independently from the intervention. It means that the programme supported those unemployed people as well who did not really need it. On the other hand, the substitution effect is also present, which means that the subsidised positions and employees shrink other non-subsidised positions and employees (Csehné, 2007, 2018). Most positions produce low added value, and participation reduces the motivation and ability of the involved people to find jobs. Additionally, these programmes proved to be expensive and increase aid-dependency.

A national survey (Cseres-Gergely – Molnár, 2014) revealed that while other active labour market programmes (education, financial support) encouraged entry to the open labour market, the public employment programme kept the new clients inside the programme. Long involvement in public employment is undoubtedly negatively related to entering the open labour market and positively to remaining outside of it. Thus, if someone is already involved in a public employment programme, his chance to leave it is bigger if his binding to the programme is looser. Most people are obstructed from searching for a job and from other income generating activities. The results of efficiency surveys revealed that the expenses of public employment reduce the application of active labour market programmes and the chance to get stuck is particularly high (Frey, 2007; Galasi – Nagy, 2008).

Among the positive effects, some experts mention the following: these programmes can provide participants with at least some temporary means of economic survival; they can contribute to the realisation of other development programmes; they can reduce poverty and inequality; they are suitable to activate disadvantaged groups, whose primary labour market integration seems to be impossible; they are suitable to overcome the challenges of structural unemployment and to ease the effects of economic crises.

Most employment opportunities are often provided by public employment programmes in rural areas (László, 2016; Koós, 2016; Váradi, 2016). Employment capacity of the primary labour market is extremely limited or is even missing in peripheral areas. Formal job opportunities disappeared in gipsy villages in the peripheral areas of the country, where the income of people living here depends entirely on family support, social transfers and public employment, in addition to the casual job opportunities which arise more by accident than by plan (Csoba, 2017; Virág, 2017). At the same time, there is not any other employment or "getting used to working" alternative for long term unemployed people (Risak – Kovacs, 2017). Additional arguments in favour of public employment programmes include their wage increasing effect, their social cohesion strengthening effect and their ability to provide up to date work experience.

Public employment originally was an active labour market programme ensuring temporary employment, but by now, it has become a job opportunity for almost all job seekers. Consequently, several new, subsidised positions requiring no special expertise have been created mainly in the agricultural sector in rural areas. Participation in the agricultural programme provides lower wages than the actual legal minimum wage, but these jobs are assured and have thus become one of the alternatives to seasonal work and having to resort to commuting (Uszkai, 2014; Koós, 2016; Kovacs, 2018).

SUMMARY

Active labour market programmes are effective only in those cases when, focusing on a certain problem, they provide reasonable and complex solutions. The Hungarian public employment programme is unique in Europe regarding the expenditures and the number of participants. It is the most important programme of employment policy after 2010, thus analysing its short and long term effects is an important task. Based on the efficiency test, national public employment programmes could not reduce long term unemployment. Public employment created a so-called second market, which can hamper economic development programmes. This inefficiency is in line with international experience and previous research findings concerning national public employment programmes. Experts agree that the most important goal is to avoid "getting stuck" in public employment. Unemployment and the resultant social exclusion is one of the greatest challenges of the 21st century. This is why it is important to rethink the concept of work and to develop new regulations.

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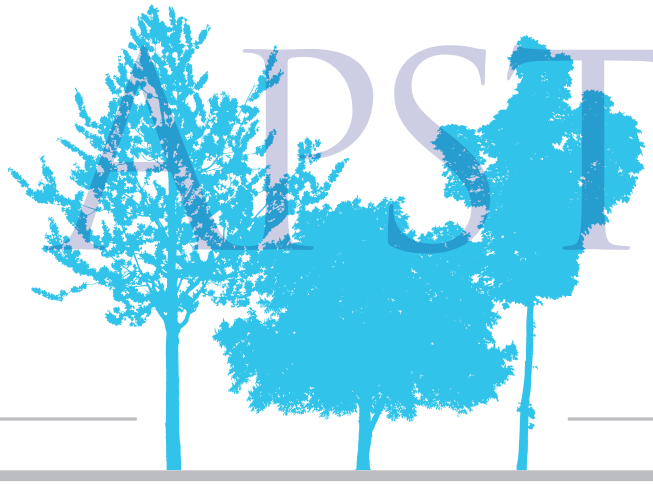

ABSTRACT

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