

Vol. 11, No. 4, 2016.

ISSN 1840-1503

TECHNICS TECHNOLOGIES EDUCATION MANAGEMENT

ttetm

JOURNAL OF SOCIETY FOR DEVELOPMENT OF TEACHING AND BUSINESS PROCESSES IN NEW NET ENVIRONMENT IN B&H



ISSN 1840-1503



9 771840 150002



TECHNICS TECHNOLOGIES EDUCATION MANAGEMENT

EDITORIAL BOARD

Editor	<i>Dzafer Kudumovic</i>
Secretary	<i>Nadja Sabanovic</i>
Technical editor	<i>Eldin Huremovic</i>
Cover design	<i>Almir Rizvanovic</i>
Lector	<i>Mirnes Avdic</i>
Lector	<i>Adisa Spahic</i>
Members	<i>Klaudio Pap (Croatia)</i>
	<i>Nikola Mrvac (Croatia)</i>
	<i>Damir Modric (Croatia)</i>
	<i>Davor Zvizdic (Croatia)</i>
	<i>Janez Dijaci (Slovenia)</i>
	<i>Tadeja Zupancic (Slovenia)</i>
	<i>Rajendrakumar Anayath</i>
	<i>(India)</i>
	<i>Anastasios Politis (Greece)</i>
	<i>Jelena Ivanovic Sekularac</i>
	<i>(Serbia)</i>
	<i>Nebojsa Vidanovic (Serbia)</i>
	<i>Hasan Hanic (Serbia)</i>
	<i>Samir Causevic</i>
	<i>(Bosnia and Herzegovina)</i>
	<i>Amir Pasic</i>
	<i>(Bosnia and Herzegovina)</i>
	<i>Vesna Maric-Aleksic</i>
	<i>(Bosnia and Herzegovina)</i>
	<i>Avdo Voloder</i>
	<i>(Bosnia and Herzegovina)</i>

Address of the Editorial Board *Sarajevo,*
Hamdije Kresevljakovica 7A
phone/fax 00387 33 640 407
ttem_bih@yahoo.com,
http://www.ttem.ba

Published by *DRUNPP, Sarajevo*
Volume 11 *Number 4, 2016*
ISSN *1840-1503*
e-ISSN *1986-809X*

Table of Contents

Energy analysis and experience obtained from the first passive house area in Norway	269
<i>Lejla Selimovic</i>	
Measures to reduce the impact of road transport on air pollution	280
<i>Almir Ahmetspahic, Damir Lihovac</i>	
Diversity Management: the Case of Slovenia	287
<i>Jasmina Starc</i>	
Interactive online-based learning materials development	295
<i>Zulyadaini, Martinis</i>	
Interaction of matter-bounded and matter-unbounded informations and their systems.....	304
<i>Mevludin Licina</i>	
Problems of Iranian Scholars in Writing Papers in English: the Case of Science and Engineering Researchers	308
<i>Ahmad Moinszade, Zohre Kassaian, Mahdiye Amiresmaili, Mohammadreza Amiresmaili</i>	
About Comparative Research of Poems “Treasury of Mysteries” and “Iskandernama” on the Basis of Manuscript Sources as the Multiculturalism Samples	315
<i>Hasanov Elnur Latif</i>	
Designing and Examining Multimedia Based Application Using Visual Basic on Early Literacy Learning.....	321
<i>Rahmat Hidayat, Seny Luhriyani Sunusi, Yusni Nyura, Andi Anto Patak, Muhammad Tahir</i>	
Quantum economy as ethical - political thought of economic balance	326
<i>Kostadin Pusara, Maja Loncar, Jasmin Jaganjac, Aleksandra Pusara</i>	
The effect of organizational conflict on organizational entrepreneurship of students sport clubs in Tehran	335
<i>Mohadeseh Fallahi, Fariba Mohammadian</i>	
Instructions for the authors.....	342

Energy analysis and experience obtained from the first passive house area in Norway

Lejla Selimovic

Faculty of Mechanical Engineering, University of Tuzla, Bosnia and Herzegovina

Abstract

This study evaluates energy consumption in the most north passive house area in Norway with the rough weather conditions and low solar radiation. In addition, this study aims to investigate the possible benefits of passive house technology. This research specifically focuses on the factors that affect energy consumption. The analysis includes electricity and heating energy consumption. 29 houses were studied, of which 14 detached houses and 15 terraced houses.

The data of consumption were obtained from Heimdal Development Company, and processed by descriptive statistics analysis.

The results show out some alarming facts; houses achieved higher energy consumption than estimated, some of them with really high consumption for passive houses. Only two terraced houses achieved estimated total energy consumption. The results also show that energy consumption is dependent on occupants behavior and that they should be well-motivated and more „energy aware”.

Key words: passive houses, energy consumption, energy efficiency, detached and terraced houses.

1. Introduction

The engagement in Low energy and Passive houses in Norway has increased during the last years. The definition of a passive house is “a building in which thermal comfort [EN ISO 7730] can be guaranteed by post-heating or post-cooling the fresh-air mass flow required for a good indoor air quality.”[1].

Wolfgang Feist, 2007). The main criterion is that the annual energy consumed.

Energy need for space heating should not exceed 15 kWh/m². An average dwelling unit in Norway consumes totally 214 kWh/m²yr of en-

ergy. The national building code has since 1997 required a space heating demand about 60-90 kWh/m²yr. From august 2009 it was limited to 40-60 kWh/m²a. The energy consumption related to domestic hot water and especially to lighting and technical equipment is in Norway much higher than in central Europe. The main reasons are not dark winters, but very cheap electricity over the decades after the Second World War [2]. In Norway buildings represent approximately 40% of the total energy consumption, 22% in the residential sector and 18% in the non-residential sector [3].

Miljøbyen Granåsen-Green City Granåsen is a new building project in Trondheim, which includes detached and terraced houses, as well as apartment buildings. Granåsen is part of the EU project *Concerto Eco-City*. This is a project that has intended to develop and demonstrate energy solutions in homes through planning measures, structural measures and energy efficient operation. All homes in the green city Granåsen are built under passive standard (NS 3700).

The objective of this study was analysis of energy consumption, regarding reaching the passive house standard. The analysis is done by Data Analysis Tool. The overall goal of this research is to deliver a report that reflects the use of passive house in most north passive house area in Norway with the rough weather conditions and low solar radiation.

2. Literature review

There is a large body of literature saying that passive house technology is supposed to be energy efficient, but it is important that the extra use of energy in the production phase not exceeds the environmental benefit of the energy savings during the use phase of the building [4]. Germany has been the leading country when it comes to passive house technology and the passive house

standard is based on the German standard made by Passivhaus Institut. It is emphasized that the Norwegian standard for passive houses does not have to deviate too much from the criteria used in Sweden and Europe. Nevertheless, it is taking into account special Norwegian conditions such that a large proportion of residential buildings consist of smaller homes and that a significant portion of the housing stock is built in especially cold climates [5]. Moreover, it is noted that according to passive house standards, conventional central heating system is unnecessary, heating should be provided through the low-volume heat recovery ventilation, air-heating elements can be heated by a heat pump, solar energy, etc. [1].

Psychological research on home owners in Miljøbyen Granåsen shows that the most important characteristics of what determines which house to buy are location, type of house including size, price and number of rooms, as well as closeness to nature. Characteristics such as garden size, view and control over the floor plan were initially desired but were disregarded while compromising to find an available house. The financial benefit of the low energy consumption, as well as the reduced environmental impact was a positive addition to the house choice, but was not influencing the house choice [6].

3. Methodology and data

The research took qualitative and quantitative methods. The qualitative approach included literature review on main publications of passive house technologies. The quantitative approach covered collection of consumption data provided by people from company *Heimdal Eiendomsmegling AS*. This research is performed in eight phases. First phase is a design phase and contains: literature review, selection of cases and design of data collection protocol. To get better introduction with the topic, review of relevant literature was conducted and logically summarized. Next phase of research is data collection and analysis.

Fourth phase represents creation of database with all collected data on energy consumption. The following phase is analysis of monthly electricity consumption and consumption of energy for heating for the first year of use of houses. Sixth

phase is calibration of hot tap water consumption and electricity consumption by end-users.

In the seventh phase is performed software simulation of heating effect of radiator.

The energy simulation software *Energy 2D* is used to prove if it is possible to achieve thermal comfort in houses with only one radiator on the floor.

4. Findings and discussion

The review of the annual energy consumption (in this case, electricity and energy consumed for heating) is key indicator of the primary energy consumption in the building. When analyzing the energy consumption in houses, several parameters must be included. The energy consumption in households is dependent on several factors such as local climate, structural condition, installations, technical facilities and the use of electrical equipment. The same type of household may have a large variation in energy consumption, depending on the owner's property, habits, knowledge and interests. Energy is provided from district heating and radiation through windows and internal gain from human presence. Losses occur through air-ing and leakages through the house shell. Indoor temperature is estimated to be 20 °C.

Unfortunately, the collection of data was limited. For buildings that are used for analysis in this study, it was possible to detect only total monthly energy consumption, and not consumption by energy carriers (electrical equipment, domestic hot water, etc.) Also, accurate information about radiator heating effects, hot water supply, about installed devices in all homes and number of household members were unavailable. For some months, there were no information about energy consumption, so that they are not representative. There were lot of unavailable information because of data protection rules.

4.1 Weather conditions in Norway

Climate has an important role in energy analysis of buildings. In Norway where climate is characterized like cold and wet it is difficult to achieve thermal comfort inside the buildings. Analyzed year was 2012, so climate dates for this year are presented in this chapter. Day light has also big

impact on energy consumption. Southern Norway never has continuous daylight, though it averages 19 hours of daylight a day in midsummer. In winter, Norway has similar periods of continuous darkness. In the northernmost areas of the country the sun never rises above the horizon for about 2 months. Southern Norway has some daylight each day, though it receives only about 6 hours of daylight a day in midwinter [7].

The Norwegian Meteorological Institute (MET, 2011) is responsible for registering climate data from weather stations all over Norway. For Trondheim there are a several weather stations. A normal temperature is defined by MET as the mean annual temperature in a period of 30 years.

Figure 1 shows the climate in Trondheim, Norway in metric units and in English units. The climate graphs depict monthly average temperatures, precipitation, wet days, sunlight hours, relative humidity and *wind speed*. From the figure, maximum temperature was in July, and minimum in January of 2012. This year did not have extreme temperatures. Averages sunlight hours were about 5 hours/day.

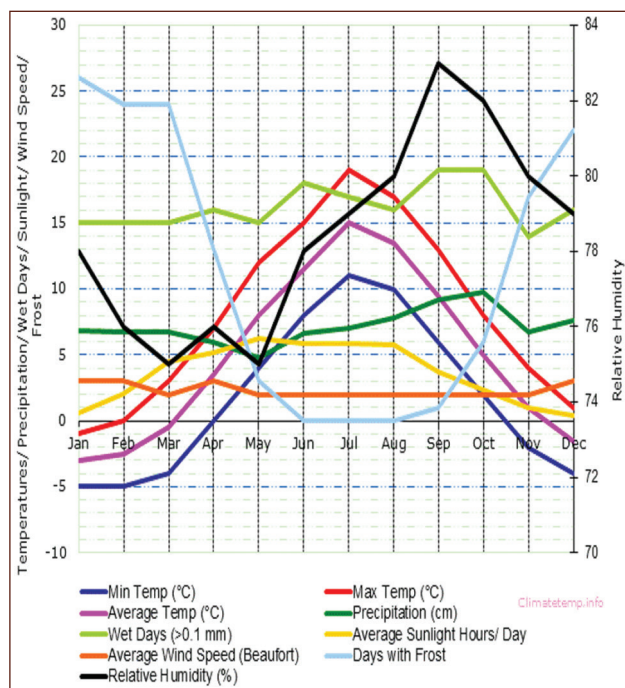


Figure 1. Trondheim, Norway Climate Graph [8]

Outdoor temperature in Trondheim, in 2012 is given in Figure 2.

The daily low (blue) and high (red) temperature during 2012 with the area between them shaded

gray and superimposed over the corresponding averages (thick lines), and with percentile bands (inner band from 25th to 75th percentile, outer band from 10th to 90th percentile). The bar at the top of the graph is red where both the daily high and low are above average, blue where they are both below average and white otherwise.

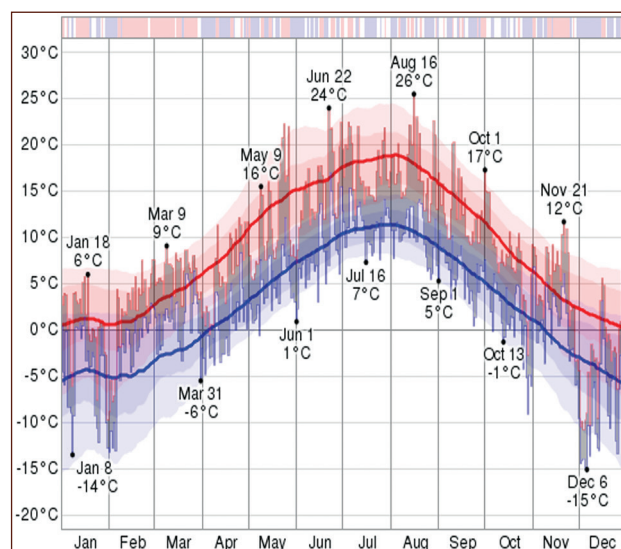


Figure 2. Temperature statistics for Trondheim for year 2012 [8]

The *hottest day* of 2012 was August 16, with a high temperature of 26°C. For reference, on that day the average high temperature was 18°C and the high temperature exceeds 23°C only one day in ten. The *hottest month* of 2012 was August with an average daily high temperature of 18°C. Relative to the average, the hottest day was November 21. The high temperature that day was 12°C, compared to the average of 3°C, a difference of 9°C. In relative terms the warmest month was March, with an average high temperature of 6°C, compared to a typical value of 4°C. The longest *warm spell* was from February 9 to February 26, constituting 18 consecutive days with warmer than average high temperatures. The month of March had the largest fraction of warmer than average days with 84% days with higher than average high temperatures.

The local weather conditions are important to take into consideration when constructing the building, and calculating required energy for the operation phase [8].

4.2 Energy consumption for area B1-detached houses

South of Trondheim was in 2012 completed 17 houses in the passive construction. Later, the 80 townhouses and 210 apartments were built in this area. All residences are listed by passive. Granåsen is the largest residential area with passive houses in Norway. Design of detached houses was based on a previous project, developer and architect had done together. Window areas were reduced somewhat in relation to previous residence. Three different housing types were designed and referred to as A1, A2 and A3, each with a heated area of approximately 180 m². All three housing types satisfy the passive requirements acc. NS 3700. The total area of the 17 units is 3082 m². Annual delivered energy (Oslo Climate) is calculated for each home to be about 94 kWh/m², divided into 33 kWh/m² (electricity) and 61 kWh/m² (thermal heating). Corresponding figures for homes satisfy minimum standards in technical regulations (TEK10/NS 3031), situated respectively: 144 kWh/m², 42 kWh and 101 kWh electricity. Houses are built with 50 cm insulation in the ceiling, 40 cm in wall and 30 cm in the floor. Heating in each house is based on a radiator in every floor. Sales start for detached houses was in late August 2010 and these were completed in the beginning of the year 2011/2012. The price of detached houses ranged from 4.7 million to 5.7 million NOK. Buildings are equipped with energy meters that measure primary electricity and district heating consumption. Since bills from total electricity consumption were only available data, they are used here to analyze building electricity consumption. These bills span the dates of March 2012 to November 2013. Energy consumption is analyzed from March 2012 to March 2013. For the analysis is used Excel's Data Analysis Tool, which is good tool for statically analysis and presentation of deviations from standard values.

Figures 3 and 4 present the analyzed detached and terraced houses.



Figure 3. Detached houses [9]



Figure 4. Terraced houses [9]

4.2.1 Electricity consumption

The annual electricity consumption of the investigated houses is analyzed in the above way. Among the 17 houses, 3 had consumption data only for 3 or 4 months, so they are excluded from the analysis. Also in 2 houses occupants failed to record the monthly amount of energy consumption in February, 3 failed to record the monthly amount in July, and 2 failed to record electricity consumption in October and November. The respective average monthly values of energy consumptions for those months are used instead of the missing values. Figure 5 shows average monthly electricity consumption in 14 detached houses.

The average values of monthly electricity consumption are reflected in Figure 5, which also shows other basic statistics such as minimums, maximums, and standard deviations for each house. The standard deviation shows the deviation extent of energy consumption from the average values. Standard deviation is largest in November which indicates that this month has the largest difference in electricity consumption among houses. It is found that the quantity

of electricity consumption is larger in summer and winter than in spring and autumn, and it reaches its maximum in January and its minimum in August.

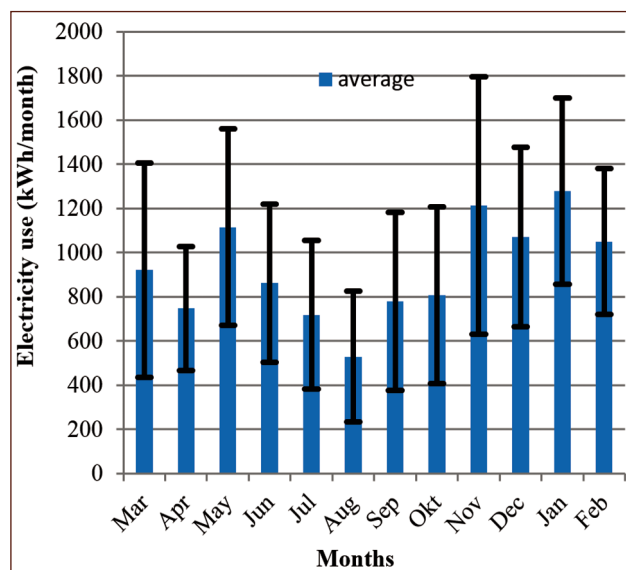


Figure 5. Electricity consumption in 14 detached houses for the first 12 months of use

4.2.2 Energy consumption for heating

In Norway the heating necessities of buildings are most relevant with respect to energy consumption as, according to Statistics Norway (SSB), heating is responsible for approximately 50% of the total energy consumption of a household [10].

Heating in each house is based on one radiator on every floor, while bathrooms have under floor heating installed, heated floor area is about 180 m².

Data for energy consumption for heating were available on monthly level from March 2012. In this paper energy consumption for heating is analyzed from March 2012 to February 2013. Figure 6 presents average monthly energy consumption for heating in a first year for 14 detached houses.

On figure 6 for better view, houses are ranked by energy consumption for heating from smallest to largest. Consumption varies from 450 kWh / month to 1220 kWh/month. From the previous figure we can see that the average energy consumption for heating is largest in house D5, with the average value of 1245, 41 kWh/ month, and the maximum value of 2211 kWh/month. Possible reason for this is that they have installed additional heating in the hall. The most „energy aware“ house is D3 with the average energy consumption

for heating of 461, 9 kWh/ month. Outdoor temperature and energy consumption for heating are closely related; when the outdoor temperature is higher, energy consumption for heating should be lower. The relationship between average monthly energy consumption for heating and outdoor average temperature is further illustrated in Figure 7.

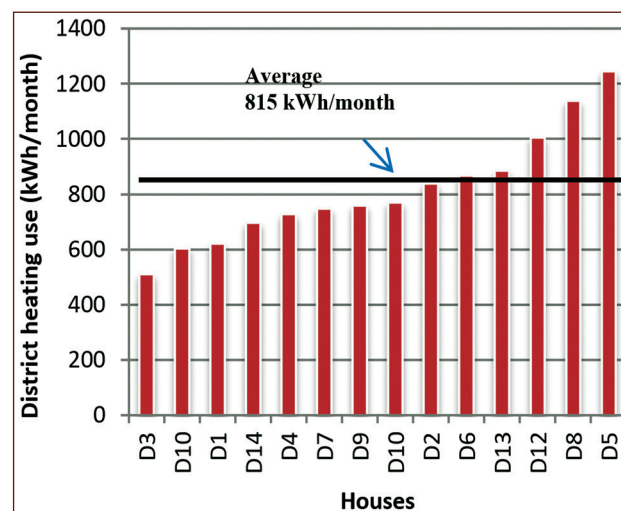


Figure 6. Energy consumption for heating in each of 14 detached houses for the first year of use

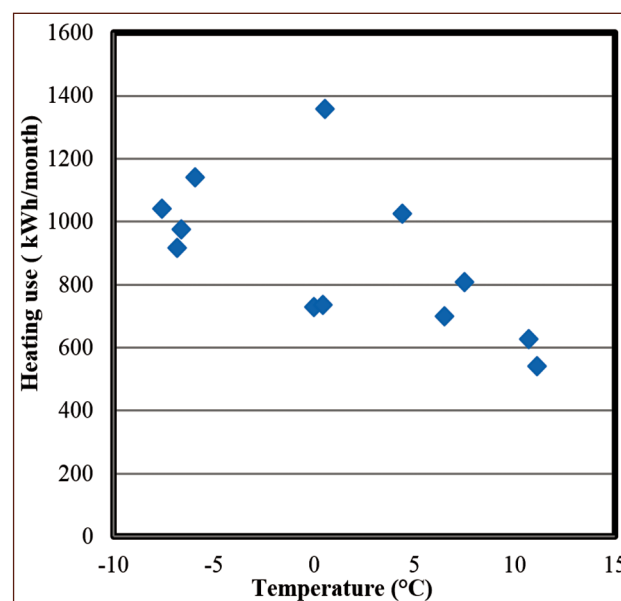


Figure 7. Heating demand in the function of outdoor temperature

Figure 7 shows that more heating energy is consumed due to the lower outdoor temperature. The highest energy consumption was in March 2012 year, for temperature 0, 6 °C, with average value of 1359 kWh/month. Heating consumption was sometimes also high for higher temperatures,

like in June, with average temperature of 7, 5 °C, with average value of 812, and 5 kWh/month.

High energy consumption for heating in the summer months can be a result of simultaneous use of ventilation and heating and overheating of rooms.

4.2.3 Specific energy consumption

In this chapter is presented specific energy consumption, actually consumption per square meter of surface of electricity and energy for heating. Electricity-specific consumption is part of energy consumption that can only be covered by electricity, i.e. energy consumption for electrical appliances and lighting. Specific heating and electricity consumption per m² in first year for 14 houses is shown in Table 1.

Table 1. Specific energy consumption in first year for detached houses

Houses	Spec. el. consumption (kWh/year/m ²)	Spec. energy consumption for heating (kWh/year/m ²)
D1	65,69	46,88
D2	69,69	62,35
D3	55,97	35,55
D4	70,56	59,17
D5	74,18	51,45
D6	86,61	59,86
D7	48,58	55,25
D8	77,49	65,08
D9	53,94	45,47
D10	71,02	35,16
D11	48,47	48,12
D12	59,98	62,23
D13	54,18	57,79
D14	57,06	40,23

Previous table shows that some houses consume far more electricity than energy for heating, while others use both approximately equally. The largest consumer of energy for heating is house D8, with specific consumption of 65, 08 kWh / m² yr. Same table also shows that highest specific electricity consumer is the house D6, with value of 86, 61 kWh/m²yr. Considering the monthly consumption for electricity and heating from the previous analysis, it is clear that the energy consumption for heating is higher than for electricity in winter months. This gives an average energy

consumption for heating per square meter of 52, 64 kWh/m² yr and 63, 81 kWh/m² yr for electricity which is slightly different from the recommended energy limits described in the regulations for technical requirements in buildings.

4.3 Energy consumption issues for area B2

In this area are terraced houses. 15 houses were analyzed which had complete data about monthly consumption for electricity and district heating. For several houses energy consumption data were missing so they are not analyzed. Also when occupants failed to record the monthly amount of energy consumption the overall average value for that months are used to replace the missing values. In this area houses have been in use since July 2012, and they were analyzed for first 12 months of use.

4.3.1 Electricity consumption

Figure 8 presents average value of monthly electricity consumption for chosen houses in first 12 months. Standard deviation shows the deviation extent of energy consumption from average values. Here is situation quite different than in the area B1, and occupants in these houses consume more electricity in winter and autumn season, than in summer, what is logical.

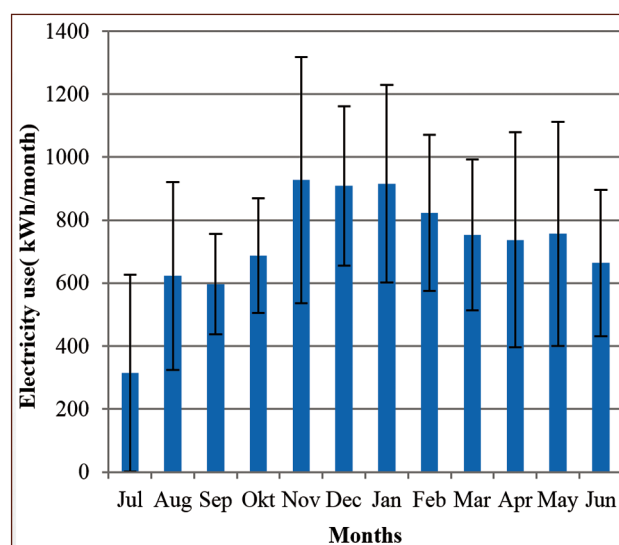


Figure 8. Electricity consumption in first 12 months for area B2

The standard deviation is largest in April which indicates that in this month is the largest difference

in electricity consumption among all houses. Electricity consumption reaches its max in November and its min in July. Figure 8 also shows that average electricity consumption is around 300 kWh in mid-summer (July), but in cold winter month (January) it is up to 900 kWh.

4.3.2 Energy consumption for heating

The space heating includes radiator heating on each floor and floor heating in the bathrooms, and heated floor area is about 160 m². Data for heating consumption were available on monthly level from July 2012, the energy for heating is used from district heating, domestic hot water heating is also provided by district heating. Heating is necessary in the cold season, which typically lasts from September to May, while minimal amounts of energy is used for space heating in the warm season from May to August [2]. Figure 9 presents average monthly energy consumption for heating energy in first year for 15 terraced houses.

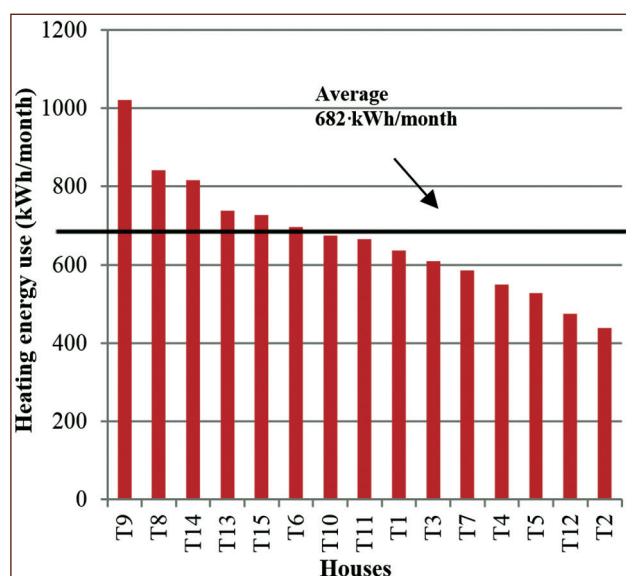


Figure 9. Energy consumption for heating in each of 15 terraced houses for the first year of use

On the previous figure is shown that the average energy consumption for heating is largest in the house T9, with the average value of 1020, 67 kWh/ month, and the maximum value of 2050 kWh/month. It should be underlined that all houses are the same and it appears that user's behavior is essential for energy consumption. Energy consumption from the Figure 9 is not corrected for

temperature and it would be natural to assume that most of the variations in energy consumption are due to changes in indoor temperature. It can be concluded that there are not climatic conditions that determine the heating pattern, but rather the occupants' behavior. High energy consumption for heating can be explained by insufficient power of radiator to achieve required temperature.

4.3.3 Specific energy consumption

Specific heating energy consumption per m² of surface in the first year for 15 terraced houses is shown in table 2.

The largest consumer of heating energy is the house T6, with specific energy consumption for heating of 56,96 kWh/m² yr.

Table 2. Specific energy consumption in the first year for terraced houses

Houses	Spec. el. use (kWh/year/m ²)	Spec. energy consumption for heating (kWh/year/m ²)
T1	61,89	50,66
T2	57,08	28,48
T3	62,93	46,96
T4	62,66	37,46
T5	50,01	35,73
T6	37,28	56,96
T7	34,18	38,71
T8	56,99	56,54
T9	40,06	41,13
T10	36,63	53,64
T11	61,58	45,9
T12	41,06	33,78
T13	51,66	49,2
T14	58,58	54,97
T15	31,46	50,1

In the case of electricity consumption largest consumer is in the house T3 with value of 62,93 kWh/ m² year. It is obvious that most of the houses in this area have a lower specific energy use in comparison with the area B1 due to the lower surfaces of houses. Table 2 shows that two houses have achieved total energy consumption lower than estimated. But still the majority of houses have increased total energy consumption in comparison with estimated. Unfortunately, none of the houses achieved heating energy consumption equal or

lower than estimated. Figure 10 shows comparison between monthly electricity and energy consumption for heating for area B2.

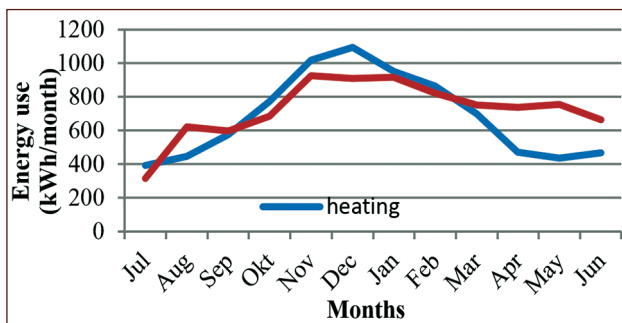


Figure 10. Comparison between average monthly electricity and energy consumption for heating for area B2

Considering the monthly electricity and energy consumption for heating from the previous analysis, it is clear that the energy consumption for heating is higher than electricity consumption in winter months what is shown in previous figure. It can be concluded that relationship between the electricity and energy consumption for heating during the different seasons depends on the type of the construction, installed equipment in the building and the climate. In the summer season there is decrease of energy consumption that enables use of natural ventilation instead of air conditioning.

5. Comparison of expected and measured energy consumption

All houses are built under passive house standard, what means that they should meet passive house criteria, but through this analysis is shown that passive standards have not met. The expected energy consumption data were available for area B1 and B2. For B1 the total energy is simulated to be 86, 2 kWh/m²yr, and for B2 74, 9 kWh/m² yr. This is expected annual energy consumption but the real situation is different what is shown on Figure 11.

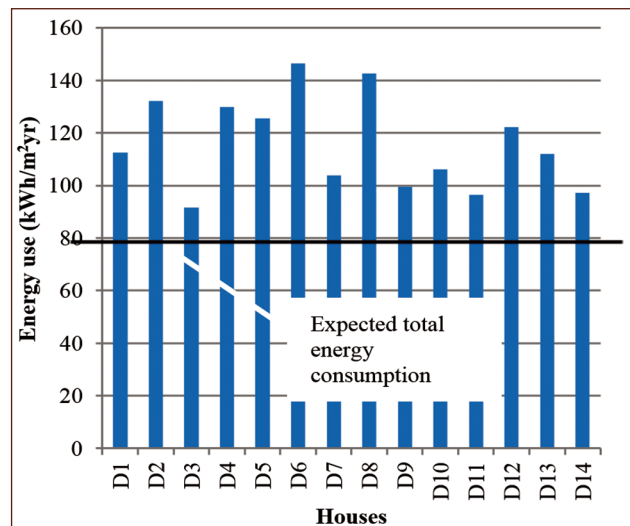


Figure 11. Expected and measured total energy consumption for detached houses-area B1

Previous figure refers to the area B1. The actual total kWh/m²yr consumption is consistently higher than expected. None of the houses in this area have achieved the expected energy consumption. Expected energy consumption cannot be the same for all houses, and cannot be the same for every year, because it depends on many factors, outdoor temperature, occupancy level, user's behavior, installed appliances, etc. On the figure 11 is showed that for the house D6 measured total energy consumption is about twice the estimated. Installed additional under floor heating in laundry, and heating cables in the hall can explain this situation. Figure 12 shows comparison between measured and expected energy consumption for heating.

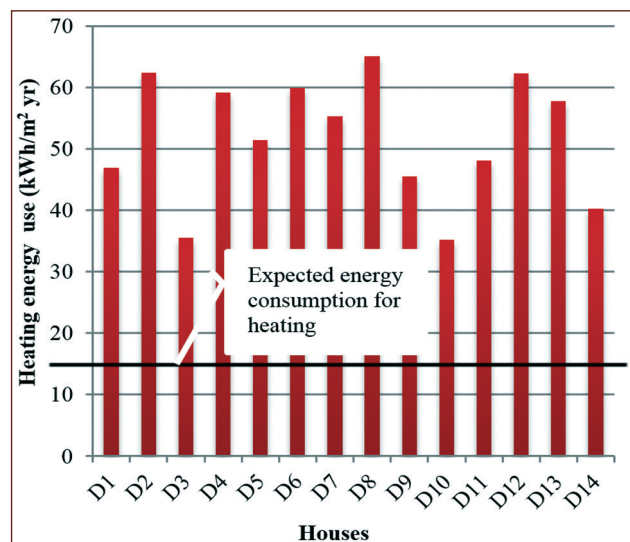


Figure 12. Expected and measured energy consumption for heating for detached houses-area B1

For area B1 expected annual energy consumption for heating is 20, 2 kWh/m²yr.

All analyzed houses demonstrated an increase in energy consumption for heating.

The results of the analysis show that the difference between expected and measured energy consumption for heating in most cases is higher than 100 %. In the house D8 difference between expected and measured energy consumption for heating is 44, 8 kWh/m²yr. House with the lowest energy consumption for heating is D3 but still with difference between expected and measured consumption of 15 kWh/m²yr. None of the houses achieved expected criteria for energy consumption for heating.

Here in 2 houses annual total energy consumption is lower than expected, in houses T7 with difference of 2 kWh/m² and T12 with difference of 0,5 kWh/m². That means that occupants in these homes are more energy efficient than the others. House T7 have installed solar shading which could be one of the reasons for this energy savings.

Figure 13 shows results for total energy consumption for area B2.

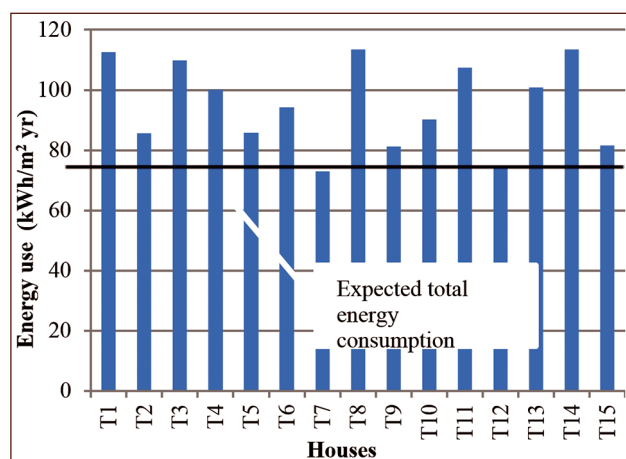


Figure 13. Expected and measured total energy consumption for terraced houses

In all other houses energy consumption is higher than expected, but not that much like in the first area. In this case house with the largest difference between measured and expected energy consumption is T8 with difference of 38, 66 kWh/m². Possible reason for this is installed central vacuum system and ventilation for bathroom.

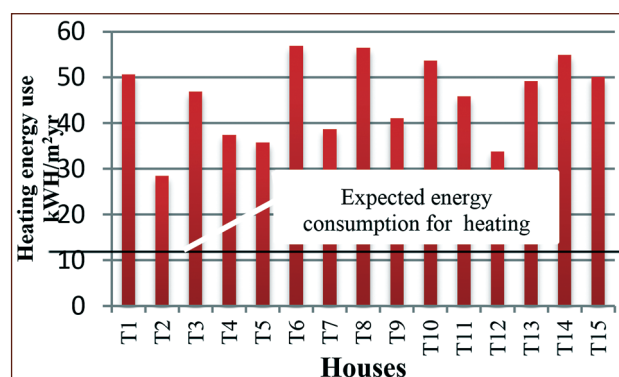


Figure 14. Expected and measured heating energy use for terraced houses

In general, there is great variation in the extent of achieved energy use. Total achieved savings are lower than expected for 27 of 29 houses. There are still large differences between expected and measured energy consumption that can not be explained by the parameters used in this report, without realistic data. Figure 14 shows comparison between expected and measured energy consumption for heating for terraced houses.

For area B2 expected annual heating consumption is 11,6 kWh/m²yr, significantly lower than in area B1, due the lower hating surface. The biggest differences between expected and measured are in the space heating and the most notable reasons could be that the indoor temperature is turned out to be higher than the estimated. It is hard to predict the habits of the occupants and it is difficult to avoid the variation of indoor temperature between houses. This analysis showed that houses achieved energy consumption for heating higher than expected. The largest difference between measured and expected energy consumption for heating is T1 with difference of 50,29 kWh/m² yr.

6. Conclusions

Energy consumption investigations were carried on in ecological city Granåsen for two different house areas, in the first 12 months of their use.

This study found that houses in ecological city Granåsen did not meet the passive house criteria. Space heating requirement < 20, 2 kWh/m²yr and 11, 6 kWh/m²yr is not reached in all houses. Total energy requirement < 86, 2 kWh/m²yr is not reached in detached houses, and energy requirement < 74, 9 kWh/m²yr is reached only in two terraced houses.

Unrealistic assumptions in human behavior have a big impact on energy consumption, this is why energy consumption for heating is underestimated.

These results should be indicator for occupants to change their behavior. Occupants who do not have an 'energy-aware' behavior should also be able to live in passive houses without limiting their activity. Most important, personal comfort should never be restricted, otherwise passive house concept would never be successful.

To achieve the passive house standards, conventional central heating system is not necessary, heating should be provided through the low-volume heat recovery ventilation, air-heating elements can be heated by a heat pump, solar energy, etc.

In the paper is shown that average annual total electricity use for all houses is about 115 kWh/m²yr. Most existing houses in Norway use approximately 130 kWh/m²yr [10]. This analysis found that there is a wide spread in the amount of electricity that houses consume. Energy consumption in two identical houses of exactly the same quality may therefore be very different [10]. Some of them consume little kWh/m²yr, while others use about 146 kWh/m²yr.

Largest electricity consumption for detached houses is in D6 and reason for that: installed additional under floor heating in toilet and in the bathroom, and ventilation in bathroom.

It should be underlined that this is a high consumption for passive houses, but is still significantly lower than the average for Norway, which is 214 kWh/m² yr [5]. Characteristics of the household, such as the number of occupants and installed appliances affects for how much electricity each house consume. Also position of the house is important factor of energy consumption. House in the middle will need less energy than those on the edge. If information about number of occupants, their age and behavior were available, it would be easy to explain these results. It is clear that houses with small children and teenagers consume more energy than households with adults.

Energy consumption for heating can be reduced by setting radiator on lower temperature, and turning of when house is not occupied. We had information that some houses consume heating in the bathroom even in the summer, what is explanation for high energy consumption for heating in the summer season.

Energy efficiency is a continuous process and does not end with the construction of an efficient object, but continues with energy use monitoring, identifying new saving potentials and implementation of new measures to improve energy efficiency. For good energy planning is important to know how much energy is consumed in the past years. Considering the growth of living standard, it is expected that more energy will be consumed in the future in order to make indoor thermal environment more comfortable.

It can be concluded that occupants did not buy their passive houses because they were energy efficient, but because of their location and view.

The findings of this study shows that the most important characteristics of what determines which house to buy is its location, type of house including size, price and number of rooms, as well as closeness to nature. Characteristics such as garden size, view and control over the floor plan were initially desired but were disregarded while compromising to find an available house. The financial benefit of the low energy consumption, as well as the reduced environmental impact was a positive addition to the house choice, but was not influencing the house choice [6]. All this result shows that there is large potential for energy savings. Simple steps to increase energy efficiency without additional cost are:

- Adjust heating at night and when no one is in the house;
- In the night turn down the blinds and draw the curtains to avoid losses;
- In the heating season reduce the room temperature by 1 °C;
- Using natural lighting as much as possible and turn off lights in a room when not needed;
- Turn off computers, TVs and other appliances when not in use to avoid losses on so-called. Stand-by mode.

There is information from one user which can be good description for situation in this area: „This gives exactly the same annual consumption that we had at our old house from 1966 that was 70 m² bigger... We had expected considerably less electricity/ district heating consumption. “

References

1. Feist W, passive house institute, 2007; website: <http://www.passivehouse.com/>.
2. Norwegian Water Resources and Energy Directorate; Energy consumption 2012, Household energy consumption.
3. Sartori, Wachenfeldt, Hestnes. Energy demand in the Norwegian building stock: Scenarios on potential reduction; 2009.
4. Xrgia. Energibruk i lavenergi- og passivbygg. Oslo: Energi Norge, 2011.
5. Standards Norway. (11.04.11); Available from: <http://www.standard.no/en/>
6. Carlsson AK. Does Sustainable Building Technology Matter to Home Buyer, 2011.
7. <http://www.weatheronline.co.uk/reports/climate/Norway.htm>
8. <http://weatherspark.com/history/28896/2012/Stjrdal-Nord-Trondelag-Norway>
9. <http://arkitektur.no/miljobyen-granasen-eneboliger>
10. Bøeng AC, Larsen BM. Husholdningenes energiforbruk: Vi bruker mindre energi i hjemmet enn før. Retrieved from Statistisk Sentralbyrå, 2008. website: <http://www.ssb.no/ssp/utg/200804/10/>

Corresponding Author
 Lejla Selimovic,
 Department of Mechanical Constructions,
 Faculty of Mechanical Engineering,
 University of Tuzla,
 Tuzla,
 Bosnia and Herzegovina,
 E-mail: lejla.selimovic@untz.ba

Measures to reduce the impact of road transport on air pollution

Almir Ahmetpahic, Damir Lihovac

Faculty of Transport and Communications, *University of Sarajevo, Sarajevo, Bosnia and Herzegovina*

Abstract

Conditioned by faster economic growth and development, the road traffic in our country and around the world keeps growing enormously which brings about great consumption of oil, as non-renewable source of energy and increase of glass gasses.

How much it is essential to take care nowadays about ecological aspects, proves the fact that, at the world level, transport means driven by diesel and gasoline participate with over 20% in climatic changes. In order to reduce the impact of road traffic upon pollution of the air, The European Union has passed a number of rules and regulations. The subject of this study is impact of road traffic upon air pollution as well as synchronization of regulations in Bosnia and Herzegovina with EU regulations. The Euro standards are described also.

Key words: air population road traffic, European Union, Euro standards, ecology, ecological parameters, EU recommendations, global heating, exhaust gasses.

1. Introduction

Road traffic is the main initiator of all economic and social activities. That is why one must continuously invest in road traffic with special care from the point of view of ecology, namely impact upon quality of environment.

In all projects, especially in projects pertaining to road traffic one must secure that through assessment of impact upon environment, the determinants which are cited are fully respected. Namely to prevent and/or mitigate direct and indirect negative impacts upon people, flora, fauna, water, air, soil, climate, landscapes, cultural heritage and material goods. The transport sector in the states of OECD participate in pollution of carbon monoxide with 44%, nitrous oxide NO_x with 52%, and volatile organic components participate with 44% [1].

What should be emphasized in measures for environmental protection in this segment is implementation of project in the domain of using the road vehicles operating on alternative fuels and electrical drive. Having in mind the harmful impact of exhaust gasses upon environment, an improvement is possible by implementation of certain measures and programmes of environmental protection. In order to reduce emission of exhaust gasses there are various strategies for a short and long term periods.

This study will describe some of the measures already proven in the world, which could significantly reduce the air pollution.

2. Efficient and more rigid standards in implementation of checking emission during technical controls EKO-TEST

The exhaust gasses of vehicles participating in population in environment must be submitted to periodic test in order to establish increased concentrations of exhaust gasses. The test points out to certain irregularities of gasses burnings in case they are present. Testing is conducted during regular technical control (VOT) and is done by an authorized person. The satisfactory results of test are the condition for passing technical control. The following should be submitted to EKO tests based on rules book that is harmonized with EU directive 2003/26/EC [2]:

1. personal vehicles;
2. autobuses;
3. combi automobiles;
4. freight vehicles;
5. operational vehicles.

The following vehicles are exempted from EKO tests: vehicles equipped with gasoline dual-tact engines, vehicles equipped with gasoline engines if manufactured before 1970, vehicles equipped with diesel engines if manufactured be-

fore 1980, vehicles equipped with diesel engine if their speed is not higher than 30 km/h, vehicles equipped with alternative drive engine or source of energy (hydrogen, methane, propane-butane, combustible cells, electric motor and similar), motor-bikes, operating devices and tractors.

The gasoline engines are divided into two groups given whether they possess lambda probe or do not possess without lambda probe. The lambda probe at the exhaust pipe is a determinant for the group and it is not the catalyst. The first group of motors is the group with REG-KAT motors (they have lambda probe and catalyst) at the exhaust pipe) and the second group is BEZ-KAT motors (they do not have catalyst or unregulated catalyst). Testing of exhaust gasses REG-KAT motors is carried out in two phases. The first phase is carried out at the working temperature at the increased number of revolutions, and the second phase is carried out at the working temperature with motor in neutral gear.

With these motors it is important that the required values of gasses must be achieved only if previous pre-heating of catalyst is carried out. If the manufacturer data about required values are not known, the test should be done in accordance with the statutory values.

Table 1. Statutory required measures of eco-test for the REG-KAT group

REG-KAT	
At engine temperature $\geq 80^{\circ}\text{C}$	
Pre-heating of catalyst minimum 1 min.	
Revolution (2500-3000) min ⁻¹	Neutral gear
CO $\leq 0,3\%$	CO $\leq 0,5\%$
Air factor $\lambda = 1 (\pm 0,03)$	

Table 2. Statutory required values of eco-tests for the BEZ-KAT group

BEZ-KAT	
At engine temperature $\geq 80^{\circ}\text{C}$	
Neutral gear of engine	
1987. year and older	1987. year and younger
CO $\leq 4,5\%$	CO $\leq 3,5\%$

BEZ-KAT engine are tested only at working temperatures in natural gear when the allowed concentrations of carbon-oxide (CO) are prescribed by the manufacturer. If the manufacturer data are not known, the contents of carbon-oxides (CO) in exhaust gasses must not exceed 4,5% of

volumetric part for vehicles manufactured in 1986 and older, i.e., 3,5% of volumetric part for vehicles manufactured in 1987 and younger at minimum engine temperature 80°C .

The measures of coefficient of darkening with diesel engines are carried out if the engine is heated to working temperature and after this it is freely accelerated to the highest speed in neutral gear three times at least. By using probe for sampling placed in the exhaust pipe one is getting a signal at the analyzer which calculates the value of mean coefficient of darkening (k). If the manufacturer data about the working temperature of mean darkening coefficient are not available, the statutory values are taken.

Table 3. Statutory required values of eco-test for the DIESEL group

DIESEL	
At engine temperature $\geq 80^{\circ}\text{C}$	
1987. year and older	1987. year and younger
k $\leq 2,5\text{ m}^{-1}$	k $\leq 3,0\text{ m}^{-1}$

Beside annual maintenance of vehicle the drivers themselves can have an effect upon better results. The most important is that the vehicle comes in for testing already warmed up and blown through. It is recommended that immediately before coming for eco-test to drive the vehicle in full gear through open road. After blowing through at high speed of revolutions, the darkening appearance can be reduced even for three times. Change of air filter can have an effect upon better results of eco-test. With new air filter the fuel mixture is of better quality and it burns better and thus it produces less harmful gasses.

Oco-test in FBiH is carried out as an integral part of technical control and since 1.05.2009 it is specially registered. The number of registered Eco-tests is given in the lower table:

Table 4. Number of completed controls and eco-test in cities in FBiH.[3]

Year of control	Total number of controls	Number of Eco-tests
2009	579.648	362.856
2010	597.147	512.115
2011	598.932	512.656
2012	602.444	518.156
2013	614.973	530.799
2014	631.508	549.732
2015	657.103	573.171

3. More rigid emission standards for vehicles in narrow city zone

By introduction of zones (Low Emission Zone – NEZ) which limit or fully ban traffic for vehicles which do not meet certain standards it is possible to influence upon reduction of emission of pollution matters and above all PM10 and nitro oxides (NO_x) and thus influence upon quality of air. In western countries Euro 4 standards are used (emission of P10 is 0.025 g/km) as a threshold based on which it is determined whether a vehicle can or cannot be in traffic in certain zones. The methods used to check this are various (stickers, video control and similar).

It is estimated that these measures could possibly reduce emission of solid particles for 10 t/year, e.i up to 5% of total emission of solid particles in case there is total limiting of traffic for vehicles that do not meet Euro 4 standard. Benefits of this measure can be even greater if the NEZ group is applied to greater area.

4. Application of alternative fuels

Technology of production of alternative fuels (fuels from renewable sources) is still more expensive than the technology of processing oil. The majority of fossil fuels are imported into EU market and in future it is expected that fuels from renewable sources will partially reduce dependence from import. Greater energy independence is a very important long term goal of EU member states. The EU Commission has initiated application of alternative fuels with so called Green paper on safe provision of energy. This document aims at replacement of at least 20% of standard transport fuels with alternative by 2020. The objectives are indicative but not binding, but each member country must notify The Commission about undertaken measures. According to the EU Commission, there are three alternative fuels which promise the most: bio-fuels, earth gas and hydrogen for driving combustible cells.

4.1. Bio-fuel

Advantages of bio-fuels are well known. They secure alternative for the existing fossil fuels in sector of transport and yield better ecological performances. Bio-fuels are considered CO₂ neutral, in other words, by burning of bio-fuels the level of

CO₂ in atmosphere is not increased. The next advantage of bio-fuels is that it is produced out of renewable and sustainable sources and can be mixed with standard fuels without need for any kind of new vehicle and special distribution networks. The major shortcomings represent limited raw materials and production prices. For further development of bio-fuels it necessary to find an agreement between the energy sector and nutrition about possessing cultivating soil. The price of bio-fuel is one key factor which limits its greater application because it is higher than production of fossil fuels.

4.2. Earth gas

Earth gas is not renewable source of energy as is the case with bio-fuels. This is a fossil fuel but given that its reserves are significantly larger than that crude oil, among other things, it can be considered an alternative fuel. Earth gas is composed mainly of methane (CH₄) 70_00% and in smaller quantities of methane, propane and butane. The EU Commission by its Green paper has anticipated introduction of earth gasses to the motor vehicle market to 10% by 2020. Technology of application of earth gasses in vehicles is already completed.



Picture 1. MAN vehicle for public transport with earth gas drive

The earth gas has a high octane number which secures quiet operation of engine without detonations. By burning of earth gas there is no emission of solid particles nor HC. The emission of CO is reduced by 90% and NO_x by 60%. By consumption of earth gasses emission of Co₂ is reduced by 15% due to low contents of carbon. One should take into account that earth, namely methane gas has over 20 times greater impact upon the effect of glass garden

than CO₂. That is why it is necessary to minimize potential leaking of earth gasses during transport, refueling and using. Lack of filling stations makes this fuel unreachable for major utilization.

4.3. Hydrogen

In long term period, hydrogen can represent an alternative fossil fuel. To this end, at the moment there are a number of essential scientific, technological and economic difficulties which should be overcome in order for this fuel to find greater application in transport sector. The EU Commission by its Green paper anticipates introduction of hydrogen at the motor vehicle market with 5% by 2020. The pure hydrogen must be produced out of mixtures in which it is bound such as fossil fuels (earth gas and carbon), bio-masses and water. Great diversity of raw materials make this type of fuel very promising one for the future. Ecological effect of hydrogen from fossil fuels is today the key and the cheapest method of production of hydrogen. Unfortunately, this process emits pollutions and it uses non-renewable fuels. Hydrogen as a fuel can be used as in already existing „oto“ motor and as a fuel for combustible cells. Utilization of hydrogen as a driving fuel in „oto“ motor is possible along with certain modifications above all at the fuel system. In this case the emission of CO₂, CO and HC is zero. The future of hydrogen driving fuel is related above all to its application as a fuel for combustible cells. The combustible cell is an electrochemical device which uses hydrogen and O₂ for production of electric energy, heat and water.



Picture 2. Mercedes-Benz O530 Citaro vehicle for public transport driven by hydrogen combustible cells (Brno, Czech Republic)

5. Characteristics of eco transport as measure

As one of important characteristics of sustainable mobility, eco transport significantly contributes to protection of environment and reduction of emission of harmful particles. Programs of eco-transport are implemented within the program „Intelligent energy in Europe – IEE“ on 1st May 2010 in large number of countries where they have shown to be very efficient from the point of view of economy as well from the point of view of ecology. The project worth 3 billion Euros lasted till April 2013 and it has been presented by Austrian Energy Agency and financed by Intelligent Energy Europe (EU).

Eco-transport is expensive series of steps, techniques and methods of behavior which a driver can implement in preparation of vehicle before travel, during planning of travel, for modification of style of driving and for analysis of data after travel which can, if applied, secure significant savings of fuel, reduction of costs of travel, reduction of emission of CO₂ and other harmful components of exhaust gasses including noise during travelling. Eco-transport can be characterized as a smart and efficient style of transport which in best possible way uses advantages of modern technologies in transport and increases its safety at the same time.

Principles of eco-transport have not been adopted to the same extent in EU, in part of auto-schools and in conduct of driver's exams. In certain EU member states eco-transport is an integral part of driver's exam. One can note great differences in methods of instructing for eco-transport in the part of formal education of drivers as well as conducting the driver's exam. It has been proven practically that eco-transport can:

- reduce consumption of fuel in average up to 10%;
- reduce emission of CO₂ for 5 -15%;
- increase safety in traffic (up to 40% less traffic accidents);
- save the money (lower costs of maintenance, less damage of breaks and rubbers);

6. Mass utilization of public transport and introduction of express lines

Synergy effect of implementation of one measure is reflected in how much it has an impact upon implementation and effect of other measures. To this end, measures are proposed which will encompass greater utilization of vehicles of public transport. The greatest effects in reduction of pollution of air from traffic are achieved by stimulating citizens to use services of public transport and reduce the needs for transport by use of private vehicles. Statistical data show that one half of registered vehicles in Sarajevo Canton (KS) do not meet the Euro 3 standards (namely vehicles are older than 15 years). Also in accordance with data supplied by Federal Statistics Institute the number of transported passengers by public transport and commuter service lines in the period 2007-2011 has dropped down on average 1%. While the number of transported passengers by tramways and trolleybuses has oscillated and on average has remained the same during the years, the number of citizens transported by buses has an average percentage of dropping, approximately 3%. One measure is collective transport of employees in public institutions at cantonal and federal levels. It assumes organization of bus transport of employees to work and return from work. To this end, it is required to make plan and programs of realization of collective transport taking into account the place of residence and location of public institution. This measure proposes introduction of express bus lines which will connect settlements with administration and business centers. An express line can be in function in certain time periods depending on the needs. This is the way to reduce use of private vehicles and above all relax traffic, especially during traffic „rush hours“. Multiple effects that could be achieved by implementation of this measure are:

- reduction of emissions of PM 10 on the basis of smaller number of vehicles in use (up to 5 kg/vehicle);
- reduction of traffic jams;
- provision of additional support to development and sustainability of subjects involved in transport of citizens;

7. Tax policy as a stimulating measure for purchase of vehicles with higher EURO standards

From the title of EU strategy for emission of CO₂ one can see that EU member states have passed the so-called „stimulating tax policy“. For vehicles whose emissions are smaller. I hope that in the period to come we shall adopt some of the examples of tax policy which are given as an example and that the tax amount will be calculated depending on consumption of fuel or on the basis of emission which is expressed in g/km. Even in certain EU member states a portion of tax is refundable when purchasing a new vehicle as a stimulating measure. Also one of stimulating measures could be return of portion of tax for purchase of hybrid or electric vehicles for the purpose of reduction of CO₂ emission.



Picture 3. Vehicle with zero Co₂ emission

Examples of tax policy in certain European countries:

Austria– fuel consumption tax (Normverbrauchssteu or NoVa) which is applied at the first registration of personal vehicle; the tax is calculated in the following manner:

- gasoline engine: 2% of the vehicle price x (fuel consumption in L/100 km - 3 litre)
- diesel engine: 2% of the vehicle price x (fuel consumption in L/100 km - 2 litre)

Belgium – tax stimulation is awarded to buyers of personal vehicle that has emission less than 115 g/km. Stimulation consists of tax return for purchase of vehicles under the following conditions:

- for vehicles with emission less than 105 g/km: 15 % of the fuel prices, maximum 4270
- for vehicles with emission between 105 and 115 g/km: 3% of the vehicle price, maximum 800

Denmark – annual tax for road motor vehicle is based on the fuel consumption:

- gasoline engine: tax varies from 520 DKK (-70 EUR) for vehicles travelling 20 km with one liter of fuel up to 18 460 DKK (-2474 EUR for vehicles travelling 20 km with one liter of fuel up to 18 460 DKK (-2474 EUR for vehicles travelling 4,5 km per consumed liter of fuel;
- diesel engine: tax varies from 160 DKK (-22 EUR)) for vehicles travelling 32,1 km per consumed liter of fuel up to 25 060 DKK (-3356 EUR) for vehicles travelling less than 5,1 km per consumed liter of fuel;

France –

1. regional tax at registration of vehicle has been increased for vehicle emission greater than 200 g/km. The basic tax varies between 25 and 46 euros depending on region. For vehicles having emission greater than 200 g/km additional 2 euros are paid for each additional gram between 200 and 250 g/km of emission and additional 4 euros for each gram above 250 g/km. For example: the owner of vehicle with emission of 275 will pay additional tax amounting to $(50 \times 2) + (25 \times 4) = 200$ euros.

2. tax for vehicles that are registered for legal persons depends on the size, namely volume of CO₂ emission:

- ≤ 100 g/km: 2 euro per gram;
- >100 and ≤ 120 : 4 euro per gram;
- >120 and ≤ 140 : 5 euro per gram;
- >140 and ≤ 160 : 10 euro per gram;
- >160 and ≤ 200 : 15 euro per gram;
- >200 and ≤ 250 : 17 euro per gram;
- >250 : 19 euro per gram.

Italy – tax stimulation amounting to 800 EUR and two year exemption of annual tax for road motor vehicles when purchasing new personal vehicle of EURO 4 or EURO 5 standard and emission of 140 g/km. Exemption of annual tax for road for road motor vehicles is extended to three years if the volume of engine is less than 1300 ccm.

Sweden – the annual road tax for vehicles that meet EURO 4 standards is based on size of CO₂ emission. The tax consists of basic tax (360 SEK or 40 EUR) + 15 SEK (1.6 EUR) for each gram of

CO₂ emission/km above vehicle emission of 100 g/km. For diesel vehicles this amount is multiplied with coefficient 3.5. For vehicles driven by alternative fuels the tax is 10 SEK (1 EUR) for each gram of g/km above 100 g/km.

UK – annual tax for road motor vehicles is based on CO₂ emission. Taxes vary from 0£ (273 EUR) (gasoline) and 215 £ (280 EUR) (diesel) for vehicles with emission above 224 g/km. For vehicles registered by legal persons tax is amounting to 15% of value of the vehicle for the range of emission less than 140 g/km up to 35% for vehicle with emission higher than 240 g/km. For diesel vehicles, an additional tax of 3% of the value of the vehicle is paid. [4]

The intention is to reduce the level of emissions for new vehicles to a desired CO₂ level of 120 g/km, and freight vehicles on a long term to 160 g/km by 2015.

Efforts are made to increase purchase of vehicles through advertising and fiscal measures and the last action would be, in the spirit of maintaining the form of consumption, to sign an European Codex of good practice of manufacturers in sense of marketing and advertizing. These proposals are among the first of implementation of Action Plan of energy efficiency dating 2006 and at the same time continuation of new EU energy policy which was presented at the beginning of 2007.

The EU Council for Environment is supporting the goal through which growth of global temperature is limited to maximum in relation to pre-industrial era. In line with the above, EU has recently laid down the goal for reduction of emission from 20% in 2020 in relation to 1990 and is ready to reduce emissions even up to 30%, if other industrial countries do the same. [4]

8. Conclusion

It is extremely difficult to stop the growth of emission of glass gasses in traffic given that implementation measures act very slowly and that they in majority are related to advancement in technical part of motor vehicles. Utilization of road motor vehicles contributes against higher expression of ecologic and safety problems in the entire world. The influence of road traffic upon environment

is mainly a consequence of increased use of motor vehicles but also of shortage of corresponding protection measures. Calculation of emission of polluting matters emitted by road traffic, e.i. road motor vehicles, is caused by specific emission which depends on road motor vehicle, kind of engine and year of manufacture, as well as size of flow, speed and characteristics of road.

Emissions of polluted matters from road traffic, namely road motor vehicles are the result of operation of motor with internal combustion, namely using of oil and oil derivatives as driving fuel for road motor vehicles.

Technological progress in manufacture of vehicles, more qualitative fuels, lower consumption and faster answer of market to economic and technical better solutions for motor engines contribute against partial slight improvement of reduction of harmful matters.

One of the fundamental goals of European Union policy of sustainable transport is meeting ecological criteria which assume a series of measures including technological improvement of vehicles, alternative sources of energy, tax policy, stimulations, definition of ecological standards and so on.

Bosnia and Herzegovina, as a country which intends to join the European Union, should, also, follow the trend of reduction of emission within the mentioned sector and adopt the taxation measures and tax relaxation in order to make traffic pool ecologically acceptable. Having in mind the above, the compilation of the Action Plan for reduction of total emissions in road traffic is of utmost importance.

Reference

1. Lindov O. *Transport i Environment*, 2011.
2. COMMISSION DIRECTIVE 2003/26/EC of 3 April 2003 adapting to technical progress Directive 2000/30/EC of the European Parliament and of the Council as regards speed limiters and exhaust emissions of commercial vehicles
3. *Statistical analysis of data of vehicle technical inspection in 2015. And professional topics expert; number 33, Institute for Economic Engineer, Zenica, January 2016*
4. <https://bib.irb.hr/datoteka/506179.rad.doc>

Bibliography

1. Golubić J. *Traffic and Environment*, Faculty of Transport and Traffic Engineering, Zagreb, 1999.
2. *Protection of Environment in road traffic*, Association of drivers and mechanics Sarajevo, 2008.
3. *Action plan for reduction of particle matters in the air in the region of Sarajevo Canton*, Ceteor Sarajevo.
4. *TEC – Traffic engineering & communications*, Scientific Journal of Traffic, Transport and Communications, Sarajevo, 2015; 2(2).
5. www.pkpa.ba/publikacije/Direktive%20EU%202.pdf
6. <https://repozitorij.fpz.unizg.hr/islandora/object/fpz%3A77>

Corresponding Author

Almir Ahmetpahić,
Faculty of Transport and Communications,
University of Sarajevo,
Bosnia and Herzegovina,
E-mail: ultra@bih.net.ba

Diversity Management: the Case of Slovenia

Jasmina Starc

Faculty of Business and Management Sciences Novo Mesto, Higher Education Centre, Slovenia.

Abstract

The diversity and uniqueness of employees create a unique working environment. This presents great potential for achieving progress, creativity and productivity, while simultaneously creating specific situations, conflicts and challenges within the organisation. Good awareness of the differences among employees and the management of said differences can constitute a great advantage, which is reflected in the higher productivity of the entire collective. At the same time, differentness also gives rise to numerous conflicts and challenges that can impede productivity if individuals are unable to resolve them properly. Diversity management must be based on the moral, ethical and legal criteria of non-discrimination and must, simultaneously, reflect the connection between corporate identity and human rights. The management of the diversity of employees requires systematic and planned hiring and retaining of personnel in the organisation, who have diverse characteristics and abilities. We present the results of an empirical research, which elucidate the opinions of 274 managers about the diversity management in their organisations. The results we obtained have shown that the managers do follow the principles of diversity management.

Key words: diversity management, diversity management methods, manager, organisation

1. Introduction

Today, most regions and countries in the world are experiencing increasingly diverse populations and labour markets. While the causes may vary, the challenges business face due to a heightened awareness of this diversity are often similar [1]. Internally, organisations promote diversity and manage increasingly heterogeneous workforces, accommodate and integrate employees with different value and belief systems, and combat a range of different forms of discrimination with both organisational and societal consequences. Externally, organisations have to manage demands from gov-

ernmental, consumer and lobbying sources for the implementation of anti-discrimination policies and laws, and for attracting and integrating employees from minority or historically disadvantaged groups. These demands and activities affect the review and revision of organisational culture, human resource policies and practices, and ethical standards.

The organisation as a concept covers a broad palette of possible entities, ranging from the family to nations or even the world. However, in terms of cities, associations and businesses, their operating methods can be described as follows: an organisation generally has a purpose, is aware of the allocation of tasks necessary to carry out the operations required to serve that purpose, has one or more persons to do so, and is a place where decisions are made and conflicting priorities may arise, especially regarding the resources needed for smoothly operating the entity [2].

Diversity in organisations comes in various manifestations, and over the years, researchers have developed many classifications to make sense of all the diversities at work. For instance, Schneider and Northcraft [3] distinguish between social category diversity and functional diversity; Harrison et al. [4] differentiate between deep-level diversity and surface-level diversity; and Garcia-Prieto et al. [5] call attention to the subjective experience of diversity, distinguishing between falling into a category and the feeling of belonging to a category. These distinctions clearly illustrate the complexity of the concept of diversity. In fact, when so many classifications and explanations are needed to clarify what we mean by diversity, we could question the power of the original concept itself. Indeed, diversity has become an umbrella notion since its first appearance on the scholarly stage. The single term diversity is now being used for a wide variety of differences between people at work, whereas originally, studies about workplace diversity dealt primarily with issues of gender, race and class [6].

For diversity management, this broadening of diversity has had profound consequences. Where-

as the smaller notion of diversity as gender, race and class focuses on inequalities between social groups, the broad notion of diversity shifts the emphasis to individual differences. At first, principles of social equality and justice were the drivers behind the management of diversity, and organisations were held morally responsible to develop policies that actively countered discrimination and inequalities. Over time, business motives seem to have replaced equality as the driver of diversity practice. The improvement of performance, sustainable advantage over competitors and the bottom line are often presented as the organisation's core goals for diversity management.

One important consequence of this stretching of the concept of diversity is that it is no longer self-evident that diversity is a critical issue for organisations. The emerging stream of critical diversity studies calls attention to unequal power relations in organisations and the need for change that is inextricable from issues of diversity at work [6,7,8,9,10]. In line with the larger body of literature on critical management studies, critical diversity studies address inequalities in the control of resources, structures, behaviours, agendas, ideologies and cultures [11]. Within critical diversity studies, researchers investigate current organisational practices of dealing with difference and heterogeneity, and subsequently identify fruitful ways to change these practices and diminish inequalities at work.

2. Literature review

2.1. Diversity Management

Diversity management has recently attracted a lot of attention in both academia and practice. Globalisation, migration, demographic changes, low fertility rates, a scarce pool of qualified labour, and women entering the workforce in large scales have led to an increasingly heterogeneous workforce in the past twenty years [12]. According to Cascio [13], managing diversity means establishing a heterogeneous workforce to perform to its potential in an equitable work environment where no member or group of members has an advantage or a disadvantage. Diversity management is a concept that recognises the advantages gained by differences [14].

Diversity management must be based on the moral, ethical and legal criteria of non-discrimination and must, simultaneously, reflect the connection between corporate identity and human rights [15]. The management of the diversity of employees requires systematic and planned hiring and retaining of personnel in the organisation, who have diverse characteristics and abilities.

Diversity management is a methodical and integrated set of interconnected activities and tasks of human resource management in order to attract, retain and continuously develop diverse human resources, and creating overall conditions and an inclusive organisational culture that values, promotes and fosters all forms of diversity as an important strategic goal and source of competitive advantage [16].

One example of best practices in diversity management when hiring people is organisations and institutions that hire people from vulnerable groups. Highlighting a company's or organisation's diversity policy in its profile allows for a safer working environment for employees and for job seekers [17,18,19]. Efficient management of the diversity of job seekers and those already employed can provide many advantages and opportunities for a company, such as a positive external reputation among companies, higher creativity, innovativeness, better management of the impact of globalisation and technological changes, a boost in employee morale and loyalty to the company, easier penetration into new markets with a different culture, a rise in competitiveness, etc.

Due to the great potential of diversity in competitive advantages, and in an attempt to avoid the negative consequences of the conflicts related to it, much attention has been devoted in recent years on how individuals and organisations can function within the scope of diversity [20]. Problems related to diversity might not occur in organisations as long as their workforce continues to grow with a proportionate number of employees from diverse cultures, of diverse sexual orientation or ethnic origin. If an organisation wishes to stay on the market, it must strive for the future and for employees who are as diverse as possible.

Diversity management is a process intended for creating and maintaining a positive working environment, in which the similarities and differ-

ences among individuals are valued. The literature on diversity management emphasises above all the organisational culture and its impact on the openness to diversity; the practice of human resource management; institutional environments and organisational contexts, all the way to pressures connected with differentness, expectations, demands and initiatives; and the observed practice and organisational results connected with employee diversity management.

Employee diversity management includes the following [21]:

- equal rights and opportunities;
- zero tolerance of discrimination;
- remedial action through reviews and adjustment measures;
- transparency in personnel policies and practices;
- open communication in departments;
- constructive performance feedback; and
- departmental accountability in promoting staff diversity.

The discussion so far has explored many of the complex and sometimes contradictory issues surrounding equality and diversity. It makes sense to bring this together by considering the range of pressures and influences that are brought to bear when managing equality and diversity.

The adoption and development of a diversity management strategy is, similarly to an introduction of new technology, a company's long-term investment. Therefore, the strategy must be developed systematically. Kandola and Fullerton [22] have reviewed and combined twelve models of diversity management found in literature. They have summed up that diversity management should proceed through the following stages:

- review of the current situation regarding the company's organisation and politics connected with diversity;
- identification of the areas that impede efficient diversity management and of potential benefits deriving from the heterogeneity of employees;
- implementation of a strategy to root out barriers;
- continuous assessment of progress in the diversity management strategy.

2.2. Diversity Management Methods

In organisations, diversity management employs an individual and organisational approach. The individual approach to diversity management comprises two interdependent directions: learning and empathy. The first is based on gaining genuine and simultaneous experiences, while the latter is based on the ability to understand feelings and emotions [23]. Learning is important for managers who are often not sufficiently willing to deal with diversity. Due to their lack of experience in the matter, they are not entirely sure how to tackle the problems connected with the diversity of employees. For this reason, managers must work hard in order to learn and gain as much experience with developing appropriate behaviour. The essence of this learning process is communication. Managers must communicate openly with younger and older members of the organisation, with the gifted and the talented, and with the employees belonging to various races or ethnic groups, in order to be able to understand them and connect with them as much as possible. They can thus learn a great deal about the personal values of different groups within the organisation and about how individuals wish to be treated in it [24]. Empathy is closely connected with the strategy of individual learning. It refers to the susceptibility of an individual to the feelings, needs and concerns of others [25]. It can also be defined as the ability to put oneself in someone else's shoes and view the world from another perspective. Empathy is very important for diversity management, since the people coming from diverse groups believe that they are the only ones who know the kind of problems they are encountering, and that they are the only ones who understand these problems. However, in organisations where the executive positions are occupied by managers capable of empathy, these managers monitor their employees and try to understand and help them. Modern organisational structures are not always suitable for diversity management [24]. Hence, an organisational approach must be designed which would take into account the following, interrelated factors:

An organisation's vision. This vision includes the importance of employee diversity in the organisation, what this diversity means to the employ-

ees, and the advantages and benefits the organisation would gain from it.

Cooperation from top-level management. The top-level management provides support to diversity management. Its activity in this field sets an example for others and distributes the resources needed to fulfil the organisation's vision.

Assessment of needs. The organisation gathers information about whether different groups of employees are being treated equally. For this purpose, it tries to establish how the employees feel about how they are being treated.

Precise and clear objectives. Based on the obtained results, the management can precisely define the desired objectives relating to diversity. It then adds these objectives to the overall business objectives. It is important that the organisation views diversity management as the basic factor that contributes to the overall success of business operations.

Specific responsibility. Members of the organisation must be responsible for fulfilling the objectives that have been adopted with regard to diversity. They can also participate in setting these objectives, which will ensure their willingness to fulfil the said objectives.

Effective communication. It must be ensured within and without the organisation. All members of the organisation must be familiar with what diversity entails.

Coordination of activities. An individual member of the organisation, or a group of members, coordinates the activities connected with implementing a diversity strategy.

Assessment. The comprehensive strategy for the diversity and activities of individuals is subject to assessment. In doing so, every organisation may make use of specific pieces of information to assess the actual needs of its members.

3. Methodology of research

The basic purpose of this research is to identify and examine the opinions of managers about the diversity management in their organisations.

The research is based on the quantitative method of descriptive research. The technique used to collect data was the questionnaire by T. Kosi et al. [18], which uses 25 claims to examine how managers manage employee diversity in their organ-

isations. Managers assessed the importance of the claims on a scale of 1 to 3, with 1 meaning "yes", 2 meaning "undecided", and 3 meaning "no". The data was processed using the SPSS 19.0 statistical software package.

The basic population that was studied consists of managers and employees in the commercial and non-commercial sector in the Republic of Slovenia. 274 managers took part in the research, of whom 81% were male and 19% were female. 38% of the respondents were aged from 51 to 60, 33% from 41 to 50, 16% from 31 to 40, 12% over 61, and 1% under 30. Most of them (24%) had a university degree, 22% had a technical college degree, 21% had a master's degree, 7% had a PhD, while the rest (19%) had a secondary or post-secondary education. 73% were top-level managers, 22% were middle-level managers, and 5% were low-level managers. 39% have been occupying the position of manager from 21 to 30 years, 32% from 11 to 20 years, 13% up to 10 years, 12% from 31 to 40 years, and 3% for at least 41 years. 49% of the managers work from 9 to 10 hours per day, 33% from 11 to 12 hours, 9% up to 8 hours, and 6% 13 hours or more. 80% of them are employed in the commercial sector and 20% in the non-commercial sector.

It must be mentioned that the sample is not a representative one, so results cannot be generalised to the entire population. In light of the disproportionate structure of the sample, a comparison of the answers of managers regarding position, gender and management level was not sensible.

4. Data analyze and results

The table below presents of the extent to which managers have developed an attitude towards diversity management and which measures they are implementing to provide equal opportunities for all employees.

The answers show that they do value diversity in their organisations (65.4%), but that only 27.4% of the organisations in which the polled managers are employed have already contemplated diversity management; however, 71.4% answered that their organisation has not created a strategy for diversity management. In addition, as many as 62.6% are undecided or do not feel a need for diversity management in their organisations. Like-

Table 1. *Employee diversity management – attitude and use of measures*

Employee diversity management – attitude and use of measures	1–yes	2–undecided	3–no
1. We have already contemplated diversity management in our organisation.	27.3	24.1	48.6
2. In our organisation we value the diversity of employees.	65.4	32.5	2.1
3. In our organisation we strive towards the diversity of employees as regards age.	47.8	37.6	14.6
4. In our organisation we believe that the diversity of employees as regards gender is a positive thing.	88.1	9.4	2.5
5. In our organisation the diversity of employees as regards national and ethnic affiliation is desirable.	17.7	76.3	6.0
6. In our organisation we value the diversity of employees as regards their interests and hobbies in their private lives.	40.4	46.8	12.8
7. When forming work teams (to carry out specific tasks, projects, etc.), we strive towards their diversity with regard to gender.	33.2	47.1	19.7
8. When forming work teams, we strive towards their diversity with regard to the age of employees.	33.2	47.1	19.7
9. In our organisation we have set quotas (i.e. targets) for hiring people from groups that are in the minority in the company or in broader society.	4.2	16.7	79.1
10. In our organisation we use descriptive guidelines when hiring (in the sense of “we wish to increase/reduce ...”, which only indicates the direction of the trend) as regards the number of employees with specific personal circumstances, e.g. women, the elderly, foreigners, and parents.	4.2	16.7	79.1
11. In our organisation we promote the formation of informal networks of employees at the workplace based on specific personal circumstances (e.g. women’s networks, parents’ groups, groups of the elderly, groups of the disabled, groups of foreigners).	4.2	16.7	79.1
12. In our organisation we allow employees to go on leave for religious holidays that are not work-free days under Slovenian legislation.	74.7	21.5	3.8
13. In our organisation we have already organised a special training programme for employees with specific personal circumstances (e.g. for foreigners, the disabled, and parents).	12.6	5.0	82.4
14. In our organisation we give more days off to employees for family occasions/obligations (e.g. the first day of school, accustoming children to kindergarten, weddings, honeymoons, severe illness of a family member, etc.) than laid down by law.	8.5	2.1	89.4
15. In our organisation we have a mentoring scheme for groups with specific personal circumstances that are in the minority in the organisation or in society in general.	4.2	7.8	88.0
16. In our organisation we enable employees flexible working hours if possible in light of the nature of the work.	3.5	14.9	81.6
17. In our organisation we endeavour to create conditions under which employees can balance their professional and family/private lives as well as possible.	65.2	24.9	9.9
18. In our organisation we carry out marketing campaigns that are directed explicitly towards minority groups in society.	5.4	0	94.6
19. Our company has created a strategy for diversity management within the company.	7.0	21.6	71.4
20. In our organisation, the achievement of objectives in connection with diversity (i.e. promoting diversity and accepting those who are different, and/or efficient diversity management) is one of the criteria for assessing my job performance.	6.2	19.0	74.8
21. We believe that in our organisation employee diversity management is needed.	37.4	41.4	21.2
22. We have or could have (if we decided on it) enough financial and other resources available for strategic diversity management.	14.5	46.2	39.3
23. We possess enough knowledge for strategic diversity management.	14.0	55.3	30.7
24. In our organisation we are familiar with the experiences of other companies with diversity management.	8.2	28.7	63.1
25. We believe that being familiar with the experiences of other companies with diversity management is/would be beneficial to our organisation.	55.1	40.6	4.3

wise, the achievement of objectives with regard to accepting differentness, and promoting diversity and efficient diversity management is not used as a criterion in assessing job performance (74.8%). This answer is connected with the answer that they are not familiar with the experiences of other organisations with diversity (63.1%), since their assessment does not depend on efficient diversity management, even though 55.1% feel that being familiar with the experiences of other companies with diversity management is/would be beneficial to them and to their organisation. Their inactivity is evident from the fact that they have or could have (if they decided on it) enough financial resources available for strategic diversity management; it is also reflected in the fact that they are not particularly interested in organising training programmes in diversity, even though they do not possess enough knowledge about it; they do not organise special training programmes for employees with specific personal circumstances (e.g. for foreigners, the disabled, and parents); and in the fact that they do not have a mentoring scheme for groups with specific personal circumstances that are in the minority in the organisation, and that they do not carry out marketing campaigns that are directed explicitly towards minority groups in society. When forming work teams, only a third of them (33.2%) strive towards diversity with regard to the gender and age of team members. 79.1% of managers stated that when hiring they do not have set quotas for hiring people from groups that are in the minority in the company or in broader society, and that they do not use descriptive guidelines regarding the number of employees with specific personal circumstances (e.g. women, foreigners, the elderly, and parents). They likewise do not promote the formation of informal networks of employees based on specific personal circumstances (e.g. women's networks, parents' groups, groups of the elderly, groups of the disabled, groups of foreigners). Other than that, almost half of them (47.8%) strive towards the diversity of employees with regard to age, while 88.1% of the managers believe that the diversity of employees as regards gender is a positive thing. Even though the diversity of employees as regards national and ethnic affiliation is more undesirable than desirable (as many as 76.3% are undecided, which shows a ten-

dency towards "no"), 74.7% of managers allow their employees to go on leave for religious holidays that are not work-free days under Slovenian legislation. 89.4% of managers do not give more days off to employees than laid down by law; nor do they enable flexible working hours (81.6%); nevertheless, as many as 65.2% of them are endeavouring to create conditions under which employees can balance their professional and family/private lives as well as possible.

5. Conclusion

The state and organisations are trying to ensure equal opportunities to all persons, regardless of their personal circumstances, primarily by emphasising the laws and other regulations in force [18]. Opinions on the perceived benefits of corporate social responsibility differ widely. Some argue that there is a strong business case for corporate social responsibility and that adopting a proactive diversity management approach can help organisations to [14,26]: understand the business and social environment in which the organisation operates; avoid business risks such as corruption scandals or environmental accidents; have greater access to capital through distinctive ethical values that appeal to particular types of investors; attract and retain customers through enhanced brand image and corporate reputation; legitimise business and profit levels and avoid government intervention or public criticism; manage human resources more effectively through attraction and retention of talent and enhanced motivation and commitment of the workforce; provide training to employees in the skills they need to implement the corporate social responsibility strategy, gain acceptance of the local community and support from the host country government, including favourable policy treatment.

Diversity management is a management approach that is directed towards maximally developing and exploiting the talents and skills of all employees, regardless of the segment of the workforce to which they belong with regard to gender, age, ethnic and national affiliation. It is based on the premise that an organisation can create and increase its competitive advantage and performance through better strategic management and engagement of all of its human resources, and by exploiting them [16].

Diversity management benefits associates by creating a fair and safe environment where everyone has access to opportunities. Management tools in a diverse workforce should be used to educate everyone about diversity and its issues, including laws and regulations. Most workplaces are made up of diverse cultures, so organisations need to learn how to adapt to be successful. How organisations manage diversity from today forward will determine the long-term success or failure in the global marketplace [27].

Acknowledgements

We thank all the respondents who participated in the study.

References

1. Gröschl S. *Diversity in the Workplace: Multi-disciplinary and International Perspectives*, Gower Publishing Limited, Farnham, Surrey, Burlington, 2011; 3.
2. Bibard L. *Integrating Diversity: Identities Replayed*. In: Gröschl, S. (Ed.), *Diversity in the Workplace: Multi-disciplinary and International Perspectives*, Gower Publishing Limited, Farnham, Surrey, Burlington, 2011; 7-13.
3. Schneider SK, Northcraft GB. *Three Social Dilemmas of Workforce Diversity in Organisations: A Social Identity Perspective*, *Human Relations*, 1999; 52(11): 1445-1467.
4. Harrison DA. et al. *Time, Teams and Task Performance: Changing Effects of Surface- and Deep-Level Diversity on Group Functioning*, *Academy of Management Journal*, 2002; 45(5): 1029-1045.
5. Prasad P, Mills AJ. *From Showcase to Shadow: Understanding the Dilemmas of Managing Workplace Diversity*. In: Prasad, P. (Ed.), *Managing the Organisational Melting Pot: Dilemmas of Workplace Diversity*, Sage, London, 1997; 3-27.
6. Garcia-Prieto P. et al. *Experiencing Diversity, Conflict, and Emotions in Teams*, *Applied Psychology*, 2003; 52(3):413-440.
7. Benschop Y. *The Dubious Power of Diversity Management*. In: Gröschl, S. (Ed.), *Diversity in the Workplace: Multi-disciplinary and International Perspectives*, Gower Publishing Limited, Farnham, Surrey, Burlington, 2011; 14-28.
8. Prasad P, Mills AJ. *From showcase to shadow: Understanding the dilemmas of managing workplace diversity*. In: Prasad, P. (Ed.), *Managing the Organisational Melting Pot: Dilemmas of workplace diversity*, Sage, London, 1997; 3-27.
9. Jonsen K. et al. *Diversity – A Strategic Issue?* In: Gröschl, S. (Ed.), *Diversity in the Workplace: Multi-disciplinary and International Perspectives*, Gower Publishing Limited, Farnham, Surrey, Burlington, 2011; 29-55.
10. Litvin D. *Diversity: Making Space for a Better Case*. In: Konrad, A. M. et al (Ed.), *Handbook of Workplace Diversity*, Sage, London, 2006; 75-94.
11. Zanoni P. et al. *Unpacking Diversity, Grasping Inequality: Rethinking Difference through Critical Perspectives*, *Organisation*, 2010; 17(1): 9-29.
12. Karreman D, Alvesson M. *Resisting Resistance: Counter-resistance, Consent and Compliance in a Consultancy Firm*, *Human Relations*, 2009; 62(8): 1115.
13. Beham B, et al. *Managing Diversity in Organisations*, Springer Gabler, Wiesbaden, Germany, 2012; 1.
14. Cascio WF. *Managing Human Resources: Productivity, Quality of Work Life, Profits*, McGraw-Hill, New York, 2003; 121.
15. Armstrong M. *Armstrong's Handbook of Human Resource Management Practice*, Kogan Page, London, Philadelphia, New Delhi, 2013; 151.
16. Keil M, et al. *Priročnik za usposabljanje za upravljanje raznolikosti*, Evropska komisija, 2007; 8.
17. Bahtijarević-Šiber F. *Stateški menadžment ljudskih potencialov: Suvremenu trendovi i izazovi*, Školska knjiga, Zagreb, 2014; 262.
18. Greif T. *Upravljanje raznolikosti v zaposlovanju: Smernice za delodajalce in sindikate*, Društvo ŠKUC, Ljubljana, 2009.
19. Kosi T, et al. *Upravljanje raznolikosti v slovenskih in tujih podjetjih*, Založba Univerze na Primorskem, Koper, 2012; 21.
20. Rozman A. *Kako izkoristiti potencial raznolikih timov*, *HRM*, 2016; 2(4): 16-19.
21. Griffin R, Moorhead G. *Organizational Behavior: Managing People and Organizations*, Houghton Mifflin, Boston, New York, 2007; 209.

22. Khan H. *Managing Diversity*, 2010, <http://www.scribd.com/doc/30935423/Managing-Diversity> [15 Novembre 2016; 22: 32].
23. Kosi T, et al. *Upravljanje raznolikosti v podjetjih: Priročnik za managerje in kadrovice*, Založba Univerze na Primorskem, Koper, 2012.
24. Treven S. *Mednarodno organizacijsko vedenje*, GV Založba, Ljubljana, 2001; 116.
25. Treven S, Mulej M. *Sistemiški pristop k obvladovanju raznolikosti zaposlenih v globalnem okolju*, *Organizacija: revija za management, informatiko in kadre*, 2005; 38(7): 321-329.
26. Washington D. *The Concept of Diversity*, Washington & Company, Durham, 2008.
27. Cooke FL. *Social Responsibility, Sustainability and Diversity of Human Resources*. In: Harzing, A. W. and Pinnington, A. H. (Ed.), *International Human Resource Management*, Sage, Los Angeles, London, New Delhi, Singapore, Washington DC, 2011; 583-624.

Corresponding Author

Jasmina Starc,

Faculty of Business and Management Sciences,

Novo Mesto,

Slovenia,

E-mail: jasmina.starc@guest.arnes.si

Interactive online-based learning materials development

Zulyadaini¹, Martinis²

¹ FKIP, Batanghari University in Jambi, Indonesia,

² FITK, The State Institute for Islamic Studies in Jambi, Indonesia.

Abstract

This study aimed to develop interactive online-based learning materials on linear programming subject. This learning materials development was orientation system approach oriented. The development model used was instructional development model (2004) and Trollip and Alessi (2001). Learning materials development steps were analysis of needs and objectives formulation, instructional analysis, learners' initial behaviors and characteristics identification, specific instructional objectives writing, benchmark reference test writing, learning strategy arranging, learning materials developing, design making and formative evaluation implementing, revision, expected instructional system gain. The conclusion in general, the validation of instructional design experts (90%), subject matter experts (96%), and media experts (92%), so the recommendation was the learning materials can be used. The results of individual test (90.79%), small group test (93.38%), and field test (88.09%) on interactive online-based learning materials development can be used. Based on the experts' validation and testing, interactive online-based learning materials were worth using.

Key words: learning objectives, learners' characteristics, learning materials, interactive online

1. Introduction

In quality, the quality of education in Indonesia is still left behind other countries both in Asia and in the world. According to the data published by the United National Development Programme (UNDP), Human Development Index in Indonesia in 2011 ranks 124th of 187 countries surveyed [1]. The important factors causing low HDI in Indonesia are net enrollment rate and gross enrollment rate (NER and GER) of education in Indonesia that are still low on average. NER data on

SD/MI is 94.44%; *SMP/MTs* is 54.81% and *SMA/MA* is 31.46% [2]. Meanwhile, in the latest report of Property Tax Development Program in 2013, Indonesia ranks 121st of 185 countries in Human Development Index (HDI) with the number of 0,629. Therefore, Indonesia is left behind two ASEAN neighboring countries, i.e. Malaysia that ranks 64th and Singapore that ranks 18th, while the HDI in Asia Pacific region is 0.683.

The government has made many efforts to improve the quality of education administration comprehensively and thoroughly. One of them is the quality of higher education administration. This effort is clearly listed in Act Number 20, Year 2003 on National Education System, which states that:

Education means conscious and well-planned effort in creating a learning environment and learning process so that learners will be able to develop their full potential for acquiring spiritual and religious strengths, develop self-control, personality, intelligence, morals and noble character and skills that one needs for him/herself, for the community, for the nation, and for the State [3].

Conceptually, there are many factors that can affect the quality level of higher education in Indonesia. One factor is the quality of learning that can be seen through the quality of learning outcome and the quality of graduates produced.

The learning process that was originally teacher centered or teacher oriented [4] which emphasized the role of teachers which then became learner centered or learner oriented which focuses on the learner [5], has been implemented gradually in learning in higher education in line with the changes made at the level of curriculum, learning tools, and the direction and purpose of education. However, the levels of learning patterns, technique of assignment, technique of assessment, and the use of technology have not changed yet.

The use of technology in learning through interactive online-based learning materials development by computer media both intranet and internet-based which enable lecturers and students to discuss and learn in virtual world not limited by time is still not optimal. This condition occurs in almost all subjects, including linear programming.

The process of developing learning materials on linear programming subject is conducted through Instructional Development Model. It is because Instructional Development Model has obvious relevance to the development of learning (including e-learning) on a small scale, so it is suitable for developing software with interactive online-based learning system design. Besides, the development of Instructional Development Model learning materials also uses a system approach that emphasizes the relationship between the components, so that it will increase the chances of integrating all the variables that affect learning in linear programming instructional design that implicates [6]:

1. An increase in productivity. Time and travel can be minimized through e-learning, so that the lecturers' productivity will not be lost due to the traveling activity he had to do to give the learning process.
2. Creating value to the organization. Competency renewal must be provided on an ongoing basis, and through e-learning, the competency will be able to keep producing creativity and innovation of human resources, and ultimately it provides value to the organization.
3. Efficiency. Competence development process can be performed in a short time, and includes a substantial amount.
4. Flexible and interactive. E-learning activity can be done from any location if the users have access to and connection with the source of knowledge, and interactivity is possible directly or indirectly, and whether can display a complete visualization (multimedia) or not.

This development of interactive online-based learning materials on linear programming subject requires concrete, systematic, transparent measures and easy to apply, either by the designer as the product manufacturer or by the users as the

people who use the products developed. Interactive online-based learning is also known as e-learning that has different characteristics from conventional learning, i.e. interactivity, independence, accessibility, and enrichment [7]. This kind of model development characteristics will be in accordance with the instructional development model measures that have clarity in every stage, easy to implement, detailed and easy to follow. In addition, instructional development model has revision activities, from instructional analysis to the next steps. Thus, the revision could create relevant learning materials that can be applied in the model development of interactive online-based learning system design.

Online interactive learning is one of the most enjoyable lecture models, convenient and affordable to get a complete understanding on a variety of subjects related to computers on the internet. This model is designed in such a way so that students can learn on their own speed and can make their time to learn efficient and can be done anywhere and anytime, and allows everyone to get a chance to learn. In general, computer-based learning can be classified into two categories, i.e. stand-alone and networked computer (more alternative participant interactivity) [8].

Interactive online-based instructional design making aims to create an optimal learning by utilizing the available means in achieving learning objectives to produce the desired changes in knowledge and skills of students.

2. Research Methodology

This study aimed to develop interactive online-based learning conceptual model on linear programming subject in Mathematics Education Study Program at Batanghari University of Jambi. The study was conducted through a system approach which was done through solving problems steps, of which every step was understood, and produces an alternative solution. The method applied was research and development (R & D) method that will result in a product or test the effectiveness of a certain product. R & D method has three major characteristics, i.e.: (1) a product is manufactured to be used; (2) the product is used in the field (in educational practice); (3) the product is always validated during the study.

In this development of learning materials, several steps were conducted:

- 1) a preliminary study,
- 2) development planning,
- 3) validation, evaluation, and revision,
- 4) and implementation

3. Research Data

The analysis results of needs of interactive online-based learning development on linear programming subject through questionnaires and interviews with students, lecturers or colleagues and the product users showed that students wanted and needed new interactive online-based learning model (using the internet) as a means and learning facility. While the interviews results with lecturers or colleagues described that the learning system used all this time was still conventional, i.e. learning system that were only lecturing in explaining the materials and sample questions that caused students tend to be passive, less passionate, and less challenged in the learning process. In addition, the learning materials used were only textbooks and old books. So, a change in new learning patterns is needed that corresponds with the times. One of which is online learning using the internet to improve skills in the use of ICT and space and time do not limit the learning.

The interview with the product user, i.e. Head of Mathematics Education Study Program, Faculty of Teaching and Education, Batanghari University of Jambi illustrated that Batanghari University has been providing internet facility that is already online since the last few years, but there are no lecturers use in the learning process.

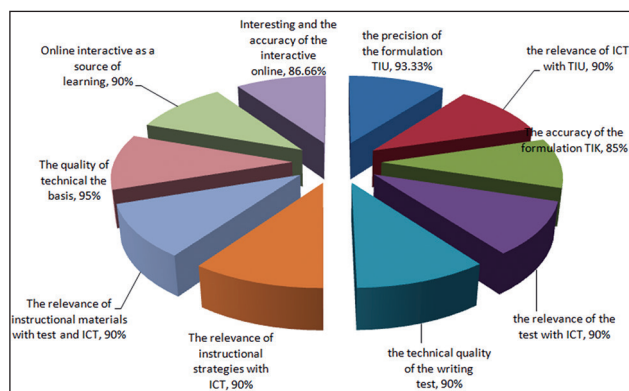


Chart 1. Second Validation Result by Instructional Design Experts [9].

The results of the feasibility of the model in formative evaluation on the chart below shows that interactive online-based learning materials developed have a good validation of instructional design experts. In general, instructional design experts' assessment concluded that overall, the quality of interactive online-based learning materials on linear programming subject is in the very good category that is on the level of conformity to an average of 4.5 or 90%. An assessment of matter experts' validation on interactive online-based learning materials draft is presented in the following chart:

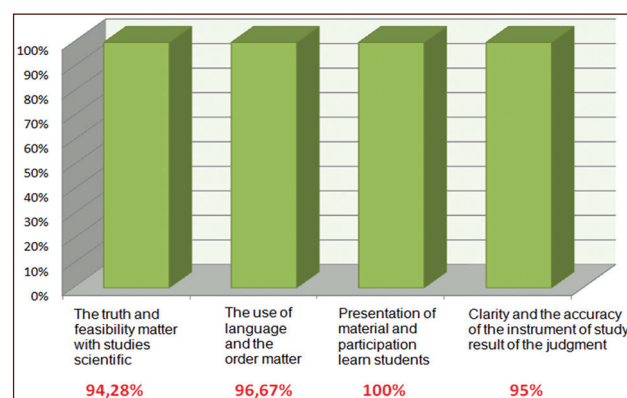


Chart 2. Chart of Subject Matter Experts' Validation Result [10].

Overall, validation results by subject matter experts on interactive online-based learning materials development draft on linear programming subject are categorized excellent with an average of 4.82 or 96.48%. The conclusion is that interactive online-based learning materials on linear programming subject is feasible to use, and the experts recommend to conduct individual test.

Validation by media experts on online-based learning materials draft on linear programming subject is outlined in the following chart:

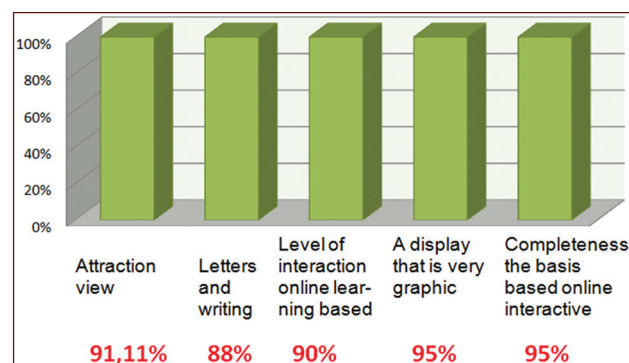


Chart 3. Media Experts' Validation Result [11].

Validation results of the three experts above can be presented in the chart below:

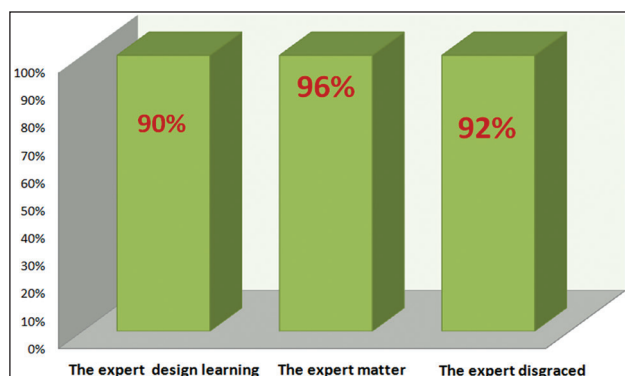


Chart 4. Validation Result of Experts Team on the Development Draft

Overall, field test on the acceptance of interactive online-based learning materials on linear programming subject developed, scored with an average of 4.4 or 88.09%. Thus, it can be concluded that the development product of interactive online-based learning materials on linear programming subject can be used, since field test is the characteristics of end users of learning materials developed.

The effectiveness of the results of field test is same with individual and small group tests, i.e. the level of effectiveness can be seen from the quality of interactive online-based learning materials developed. These results showed that interactive online-based learning materials were more effective, more attractive and can be used anywhere. Thus, it can be concluded that interactive online-based learning materials met the quality of value achieved and the effectiveness of online-based materials developed can be seen.

An overview of individual, small group and field tests is presented in the chart below:

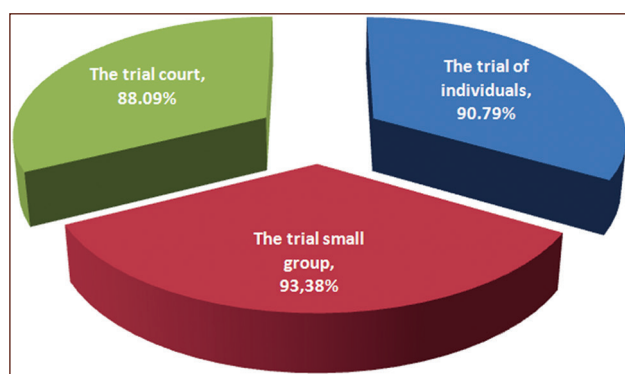


Chart 5. The level of acceptance of individual, small group and field tests

The pre-test and post-test scores showed that $t_{hitung} > t_{tabel}$ ($5,0444 > 1,72913$). It was concluded that *there was an effect* of learning materials in the learning process on linear programming subject.

4. Discussion

4.1. The Role of Learning Materials of Linear Programming in Learning

Learning materials aim to facilitate learners to study the materials or information conveyed to learn effectively and efficiently to achieve instructional objectives. It gives an indication that a learning process will be effective and efficient if it begins with a design of learning materials designed in accordance to the needs of learners.

The quality of learning depends on the quality of learning materials design undertaken by learners by lecturers in higher education. The role of lecturers in designing learning materials is a major thing and very important because the learning materials will be studied should meet the needs of students as learners. Lecturer is an agent of change who can bring a better education. It means that the learning materials used in learning process are the learning materials that meet the rules in terms of science. Yet, based on the results of observations, questionnaires, and interviews, they gave different facts.

The results of observations on the study conducted so far were still using conventional teaching and learning by only using lecturing method with learning materials from old textbook. The learning performed were only material delivery and lecturing, giving problems examples and tasks in the form of exercise so that students are only as good listeners and less active in the learning process. In addition to learning process, the learning materials used do not meet the rules of educational technology study, i.e. reviewing the analysis of needs and learning objectives formulation, instructional analysis, identifying initial characteristics and behavior, formulating specific instructional objectives, benchmark reference test, strategy, development of the learning to formative and summative evaluation. It is seen from the books used were old books, so the conditions of learning will be different with the students today who are influenced by the developments in information technology. This

means that the initial characteristics and behaviors of the students must be reviewed and adapted to current conditions. The differences in characteristics and behaviors as the analysis in learning affect the ability of lecturers to plan the learning strategies implemented. It means that the differences in the characteristics of students will produce different learning strategies in each of the characteristics already analyzed.

Other things were there were also learning materials that do not have specific instructional objectives, the design of the evaluation outline that is not in accordance with learning objectives as well as the materials developed that are not in accordance with the needs of the students because lecturers not develop the materials or learning materials, causing a gap, and then learning materials are not in accordance with the needs of students. General instructional objective is a reference for lecturers in designing an assessment of benchmark reference test (compiling test instrument), developing learning strategies, developing materials and the basis for selecting the media used.

Learning materials play an important role in all learning activities. Learning materials serve as a representation of lecturers' explanation that can be used as learning activities guidelines including targets and goals to be achieved. In addition, learning materials serve as the means to achieve instructional objectives that have been set. Therefore, preparation of instructional materials shall be guided by prescribed general instructional objectives.

In addition to the results of observations, the results through questionnaires also provided information that the learning performed in the delivery of competencies and learning objectives were sometimes given and sometimes were not. While the learning resources were only in the form of text book with lecturing learning model (traditional). Delivery of content were in the form of an explanation of material by lecturing, giving problems examples and continue with the exercise. The references used were still limited to books and there were no other sources. The learning performed conventionally made students tend to be passive and less motivated.

Then in terms of information technology, students have already used computers and have used the internet to find the information needed. So, students wanted a change of learning that is in ac-

cordance with the development of science and technology. One of them is through the internet by interactive online learning materials designed in accordance with the needs of the students. This type of learning will be able to make students learn more independently, not limited by space and time. The combination of interactive online-based learning materials is a learning infrastructure and facility.

Another instrument spread was conducting interviews with lecturers or colleagues. The results of the interviews provided information that an online learning had never conducted. The learning undertaken so far was still conventional. The medium used was still using whiteboard and wrote using markers. While facility like projector was sometimes used, besides medium such as Wi-Fi was never used at all in linear programming learning. So, lecturers and colleagues suggested learning to use the internet network (online) and can discuss in the study session. It will make learning better and not limited by time and space. In addition, online learning can also improve the understanding in terms of matters since students learn independently and master technological development. The interviews led to a conclusion that a change or a new breakthrough that in accordance with the times is necessary. One of which is an online learning, which uses the internet to improve students understanding in terms of material and to improve skills in the use of ICT, and time and space do not limit the learning.

In addition to interviews with lecturers and colleagues, the interview was also conducted with the product user, i.e. Mathematics Study program, Faculty of Teaching and Education, Batanghari University of Jambi. The interview result gave information that the Faculty of Teaching and Education in Batanghari University already has Wi-Fi that has been used for the last few years, but there are no lecturers use it for online learning. According to the user, online learning needs to be performed to stay up-to-date. Online interactive learning is already suitable for use in Batanghari University since the students and lecturers can operate computers and internet networks. However, before an online learning performed, lecturers are expected to design learning materials that will suit the characteristics and circumstances of students in Batanghari University. Thus, the learning will be more effective and

efficient. If there are lecturers who want to develop the learning, the user-in this case is Mathematics Study Program, Faculty of Teaching and Education, Batanghari University-will provide support both in terms of socialization and other assistance needed. From the results of these interviews, a conclusion can be drawn that Batanghari University of Jambi has provided facility, i.e. the use the internet that is already online since the last few years but there are no lecturers use it, and the development of interactive online-based learning materials on linear programming subject in Batanghari University of Jambi is needed.

Based on the above conditions, then innovation in learning needs to be made. The simplest way is to develop learning materials that are in accordance with the characteristics and capabilities of students. However, in line with the development and progress in communication and information, it will be better when the designing in learning materials is interactive online-based to understand the material independently and cause an interest feeling to learn and can also master the information and communication technology.

4.2. Interactive Online Learning Materials Concept Model

The learning material made was a process made through the steps of instructional system designing. Instructional system design is a systematic approach in planning and developing the means and tools to achieve instructional objectives and needs. All these system concepts (objectives, materials, methods, media, tools, evaluation) in relation to one another is a regular systematic unity. These components are first tested for their effectiveness before their use being distributed. It means that the development model of learning materials will produce a new product wherein the process passes an organized procedure that includes the steps of analyzing, designing, developing, implementing and assessment of learning. Furthermore, instructional design as a field of science can be classified as a discipline related to the understanding and improvement of an aspect in education, i.e. learning process.

Interactive online-based learning model concept is an online learning as one of the most enjoyable lecture models, convenient and affordable to get

a complete understanding on a variety of subjects related to computers on the internet, because there will be a merging of learning materials, such as text, audio, images, tables, and even video in interactive online learning. This model is designed in such a way so that students can learn at their own speed and can make their time to learn efficient and can be done anywhere and anytime, and allows everyone to get a chance to learn. Interactive online-based learning materials on linear programming subject adopt Instructional Development Model, while the flow of the interactive media program development adopts a prototype model. Prototyping is a software development method that is widely used. With this prototyping method, the developers (lecturers) and users (students) can interact during the system manufacturing process. A user who simply defines in general what he/she wants without mention in detail what output he/she needs, processing, and what data he/she needs often occurs.

Thus, the conceptual model of interactive online-based learning materials on linear programming subject is using online learning. Online learning has a variety of communication options that can be used in learning process, such as discussion forums, e-mail, and so on. The aspects merged in online-based learning materials may take the forms of text, tables, images, sound, and video. Learning materials at every meeting has been prepared in accordance with the syllabus.

4.3. Interactive Online-Based Learning Materials Procedural Model

The development of interactive online-based learning materials is based on the development of instructional system design that serves as a guide in learning activities, so that the interactive-based learning material is one reference that can be used in teaching the students. The designing in teaching materials is using a combination of instructional development model and Trollip and Alessi's model. Instructional development model is performed to design learning materials in the form of a manual called draft 1, while Trollip and Alessi's model is used to design the medium used, i.e. web, called draft 2, while the draft 3 is the final draft of which is the combination of draft 1 and draft 2, thus, interactive online-based learning is formed.

Instructional development model on draft 1 starting from analysis of needs and objectives formulation, i.e. an analysis of the needs required by the users by taking samples from students, lecturers and colleagues, the product users, as well as observations on the implementation of learning. Analysis results of needs showed that students required development of interactive online-based learning materials and continued with the establishment of a general instructional objectives. To achieve general instructional objectives, instructional analysis is needed to determine the limits of the competence that must be owned by students, which have been mastered and which ones have not. The next step is to analyze initial characteristics and capabilities of students, so they can determine where the material begins and what strategy to use. Then, continued with the determination of specific instructional objectives and benchmark reference test, as well as the development of learning strategies that could develop learning materials contained in draft 1 that contains learning materials.

Draft 2 is a development in terms of the media used. Draft 2 is an explanation of the components, subcomponents which were then included in final draft. It means that draft 2 is the web home of interactive online-based learning materials by filling learning materials from draft 1 to draft 2. The result of posting this thing into final draft is interactive online-based learning materials in physical form.

The results of the development of interactive online-based learning materials on the review of (1) instructional design perspective, (2) material perspective, and (3) learning media perspective.

The review of learning design perspective

Heeding the advices and comments from instructional design experts, developers make improvements to the design of interactive online-based learning materials. The improvements include improvements on the language or sentences and confirmation of expected learning objectives, so that it will form clear, precise, and straightforward formulation. Then, improvement on behavior of each ICT to be revealed clearly, the improvement in the verb of 'operational' in ICT to be made from simple to complex, making sentences more rational so that ICT is easy to understand. The next improvement in test items described in the condi-

tion that the achievement of a lesson will be obtained after the condition have been created. Then in terms of images and graphics in test items to be made clear so that the description of the images can be well understood. The next improvement is on learning materials to be made more attractive, the font to be adjusted to the rules of writing, tables and images displayed to give explanation that is easy to understand so that it will obtain good results in interactive online learning materials.

The improvements above need to be done, so that interactive online-based learning material can be used as a source of learning that can be used by students. The improvements were done to increase the quality of appearance and presentation of learning materials. Good learning materials presentation should consist of a detailed material description, sample questions, exercises, summaries, competency testing and references.

Interactive online-based learning materials on linear programming subject is a sequence of material that contains information that is studying linear programming. Therefore, interactive online-based learning materials must be made as attractive as possible. The attractiveness will raise motivation for learning materials users. Shortcomings in terms of attractiveness will cause the users lazy to learn.

Material perspective

The results of the subject matter experts' validation of interactive online-based learning materials developed reflected the feasibility of learning materials. Overall, the results of the material validation were very good and eligible for use in one-to-one-learner test. According to subject matter experts, the indicator of truth and worthiness of material with a scientific assessment had been correct and eligible for use—meaning it was very good. Then, on the indicator of language use and material order, the material was in accordance with the applicable rules. From the indicator of material presentation and students learning participation, it had been feasible. Then on indicator of clarity and precision of learning outcome assessment instruments, it had been appropriate and clear.

Thus, the results of validation by subject matter experts recommend for individual testing (one to one learner). However, interactive online-based learning materials specifically did not suggest any

improvement or review in detail, but there were some things that need to be corrected in the learning materials correction results, such as errors in typing, images layout, and parts of the composition of learning materials. The parts that were already corrected and subject matter experts had approved the correction, so it was recommended to proceed to the individual testing step (one to one learner).

Learning media perspective

The results of validation by subject matter experts recommended that media in terms of attractiveness was categorized excellent. The display of learning materials was in accordance with the name or domain of interactive online-based learning materials. In addition, the theme display, ease of navigating operation, and color were in accordance with the name of online-based learning materials and ease of login. Font and writing of interactive online-based learning materials used were in accordance with the rules of Indonesian writing. Meanwhile, the interactive capacity, chat, discussion process, download and upload had been very good with adequate operation speed.

Specifically, the results of validation by learning media experts showed very good results. However, there were little improvements, i.e. theme and color should be relevant to mathematics, as well as the integration of color. All these things had been corrected and approved by media experts, so that recommended to proceed to individual testing (one to one learner).

4.4. Interactive Online-Based Learning Materials Physical Model

Physical form of interactive online-based learning materials is a result of several drafts developed, i.e. in learning materials in the form of learning materials of linear programming, which consist of 8 chapters and included in the web. Each meeting has material description, exercises, summary, and a competence test. The physical form is a way by opening Mozilla Firefox or Google Chrome, type <http://www.pembelajaranonlineinteraktif.id> and learning main page will appear. On the main page, there are homepage, curriculum vitae and about menu. Each has a function to return to its original

position, click home. Curriculum vitae provides information about CV of the designer or programmer, and about menu is a sequence of program development and dissertation making.

Implementation of learning started by clicking login then fill Student Number, password and captcha requested then click Submit Form. To start the course, students simply click on Select Subjects in the upper left corner of the screen in the program. Please select the subjects. As selected, new menu at the top lined to the right will be displayed, i.e. Home, Syllabus, *SAP*, Material & Exercise, Competency Test, *UTS*, *UAS*, See Scores, Discussion, and Logout. Then click on the syllabus menu to see the subject matter. In addition, *SAP* menu is the menu to see what materials will be studied. Click *SAP* menu then the options will appear of which meeting will be studied. After clicking meeting, the lecture time will automatically start running and will be visible on the menu under the photo of students. Furthermore, students simply clicking material and exercises to understand the material will be studied. If there are difficulties, students may click discussion menu, i.e. navigation to ask and discuss with other students and with lecturer.

Each meeting has a competency test that will be tested at the end of the meeting, by clicking competency test. After learning is finished, students can see their scores every time the meeting ends, and proceed by clicking logout menu to terminate or out of the lecture.

This physical form has advantages and disadvantages, which the advantages were easy to access and can carry out discussions with other students and with lecturers. Based on the results of the validation test by experts, individual testing (one to one learner), small group, and a large group (field trial) recommended that the learning was worth using. However, the shortcomings of this physical form were the lecture should be done on a prescribed schedule on a regular schedule, which means that lecture can only be conducted in the hours and days that have been determined. However, repetition of the material that had been learned can be opened anytime and anywhere.

5. Conclusion

Based on the process and results of the study with all its limitations, it can be concluded that the learning implementation of linear programming subject still used conventional learning, i.e. still using learning by lecturing method, which puts the lecturer as the only source of study (lecturer is dominant in the implementation of learning). The learning process that only performed in the classroom was intended that students can master the subject matters in accordance with the syllabus and books references provided. The learning materials used were only old textbooks. So, a new breakthrough such as the development of learning materials is needed for constantly updating the interactive online-based material on linear programming subject. The process of developing a conceptual model of interactive online-based learning materials on linear programming subject was using online learning such as discussion forums, email and so on. The aspects merged in online-based learning materials may take the forms of text, tables, images, sound, and video. Learning materials at every meeting had been prepared in accordance with the syllabus. In designing learning materials, a combination of instructional development model was used for manual learning materials with Trolip and Alessi's model to design the medium used, i.e. web. The result of the design developed then validated by the experts who were recommending that the development product of interactive online-based learning materials on linear programming subject had been carried out in accordance with the methods, procedures, principles, and had been based on the development model, preliminary research, product development and formative evaluation. The experts team recommended that the developed model was worth using. The implication of the development of learning materials will increase the impact on learning materials access via online quickly and facilitate lecturers and students to do the learning not limited by time and space. Therefore, this model was recommended to be applied in all education either by face to face or remote learning.

References

1. Maulia E. *Indonesia ranks 124th in 2011 Human Development Index*, Jakarta: *The Jakarta Post*, 2011; 1.
2. Wibawa B. *Pendidikan Teknologi dan Kejuruan*, Surabaya: *Kertajaya Duta Media*, 2005; 2.
3. *Undang-Undang Republik Indonesia Nomor 20 Tahun 2003, Tentang Sistem Pendidikan Nasional*, Bandung: *Citra Umbara*, 2006; 12.
4. Martinis. *The Influence of Leadership Style and Professionalism of Head of Madrasah to Madrasah Culture in MAN Model Jambi*. *International Journal of Applied Business and Economic Research*. 2016; 14(6): 3929-3935.
5. Atwi Suparman M. *Desain Instruksional Modern: Panduan Para Pengajar & Inovator Pendidikan*, Jakarta: *Erlangga*, 2012; 9.
6. Andriani D. dkk. *Cakrawala Pendidikan: E-Learning dalam Pendidikan* (Jakarta: *Universitas Terbuka*, 2003; 353.
7. Rusman Kurniawan D, Cepi R, *Pembelajaran B. Teknologi Informasi dan Komunikasi: Mengembangkan Profesionalitas Guru*, Jakarta: *Rajawali Pers*, 2012; 264.
8. Zainal A. *Model-Model Media dan Strategi Pembelajaran Kontekstual (Inovatif)*, Bandung: *Yrama Widya*, 2013; 62.
9. Hasil validasi ke-2 oleh ahli desain pembelajaran, 221-227.
10. Grafik hasil validasi ahli materi, 204-207.
11. Hasil validasi ahli media, 232-235.

Corresponding Author
 Martinis Yamin,
 FITK,
 The State Institute for Islamic Studies,
 Jambi,
 Indonesia,
 E-mail: martinisyamin@yahoo.co.id

Interaction of matter-bounded and matter-unbounded informations and their systems

Mevludin Licina

Gymnasium „Rizah Odzeckic“, Zavidovici, Bosnia and Herzegovina.

Abstract

The paper presents a view of the nature of information, their interactions and their influences on other bodies/systems that are able to register them and to act or behave in any way.

The paper involves new types of differentiations of informations by their „bound-state“. Information is carried, stored, retrieved and processed by machines, whether they be electronic computers or living organisms [1].

Informations can gather in systems in which they could interact with each other and basically this is the element that keeps the system of information to be a system. Their interactions are divided in two types: singular interactions and total/systematic interactions.

Key words: bounded information, unbounded information, information system, positive and negative interaction.

1. Introduction

Definitions:

1. Bounded information/matter-bounded information is an information that is containing in itself true present data for the matter from which it traveled to a certain place in space and time where it gets registered. That means that the real data of the matter didn't change for the period the information was traveling.
2. Unbounded information / matter-unbounded information is an information that contains data for a matter that was at some point in the past true but in the present NOT. Namely, the data of the matter changed but the information that is traveling contains data of matter in the past so this data is not true for the present state of the matter.
3. Information system is a group of informations that are interacting in any way. However,

this can be also defined and is equivalent to the definition of information systems used in papers of Z. Pawlak [2][3], including that different types of informations can affect each other (the relations and classification are irrelevant).

4. Positive interaction is an interaction between two or more informations in which one or more informations have influenced the other information(s).
5. Interactions between informations are not defined entirely as *the interaction information* [4], or *amounts of information* [5] or *co-information* [6] that are defined as generalizations of the mutual information. In the above mentioned models the interactions of variables are described, but in this paper the interactions will be described from a physical point of view as we define a information as a light wave.
6. Negative interaction is an interaction between two or more informations in which no information has influenced by changing the data that is contained in the information.

Informations can change other information and that means that they can change a matter state or its determination. Without information interactions every single corner of space would be an unconnected part, meaning that it would be more different „spaces“. Namely, every point in space would have its own isolated information. The main purpose of this paper is to explain the interactions between informations that are defined as light waves.

2. Classification

On the base of the truthfulness of a data or information that is traveling from the matter, we classify:

1. Dead informations (matter A has changed but the information of it is still available - not true for the present state of matter)

2. Living informations (matter A has not changed from the moment the information has been released in space – true for the present state of matter).

3. Interactions

From the moment the information is separated from the matter, it is necessary that a certain period passes till the information makes any influence eg. on other informations.

If the information A has its initial coordinates A (x_1, y_1, z_1) , it will interact with the other element B (x_2, y_2, z_2) for a period determined by the distance between A and B. For example, if the interaction is between two informations that travel at the speed of light, adjusted equations for the interactions would be :

$$t_A = \frac{d}{2c} \dots\dots\dots (1.1)$$

$$t_B = \frac{d}{2c} \dots\dots\dots (1.2)$$

where t_A represents the time that is needed for information A to travel half the distance d between A and B and t_B represents the time that is needed for information B to travel half the distance d (see the following equation).

$$d = \int c \quad d(t_A + t_B) \dots\dots\dots (2)$$

3.1. Interactions between (different) components

The categorization of interactions can be made based on the point of view; if the information is being influenced by the other information or if there is any internal influence on any component of the system.

Based on this, they're divided into:

1. subjective interactions,
2. systemic interactions.

3.2. Subjective interactions

Subjective interactions are interactions for which we know if the influence on the observed information is positive or negative. There are following cases:

Table 1. Results of subjective interactions (where the symbol „→“ is interpreted as „influences“)

Components of interaction	Result of interaction
Dead inf. →Dead inf.	(-) (negative interaction)
Dead inf. →Living inf.	(+) (positive interaction)
Living inf. →Dead inf.	(-) (negative interaction)
Living inf. →Living inf.	(+) (positive interaction)

Explanation of the interactions given in *Table 1*.

Case 1. A dead information has no influence on a dead information for dead informations have no true present data so changes in reality cannot be made based on incorrect informations.

Case 2. A dead information can influence a living information for living informations have a certain connection with the matter they specify. The dead information can affect the matter that is related with the living information, so in a indirect way, the dead information has the potential to change the living information. Namely, in this way a living information can become a dead information.

Case 3. A living information cannot affect a dead information for the dead information has no longer any connection with the matter in the present. Even if the living information affects the matter that was related with the dead information, the dead information can not be changed.

Case 4. As it stands in Case 2: Any information (dead or living) can change a living information.

3.3. Systemic interactions

Interactions in a information system are:

1. negative systemic interactions,
2. positive systemic interactions,
3. *mixed systemic interactions.

**Except for a system of two components.*

Table 2. Results of systemic interactions via subjective interactions

Systemic interactions	Subjective	Interactions
	Dead inf.	Dead inf.
Negative interaction	<i>Negative interaction</i>	<i>Negative interaction</i>
	Dead inf.	Living inf.
Positive interaction	<i>Negative interaction</i>	<i>Positive interaction</i>
	Living inf.	Living inf.
Positive interaction	<i>Postive interaction</i>	<i>Positive interaction</i>

3.4. Interactions in complex systems

Interaction in complex systems means the interactions of all information in this system that implies every possible relation. A complex information system is a system that includes more than two informations. For example, a system of three components (informations).

a) System of three dead informations

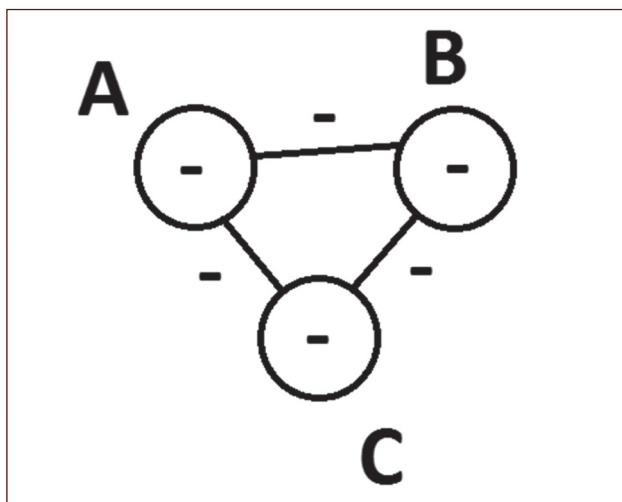


Illustration 1. Three dead informations

Table 3. (Com. = Components; R. = Result of interaction)

Com.	R.	Com.	R.	Com.	R.
A→B	-	B→A	-	A,B	-
A→C	-	C→A	-	A,C	-
B→C	-	C→B	-	B,C	-

b) Two dead, one living information

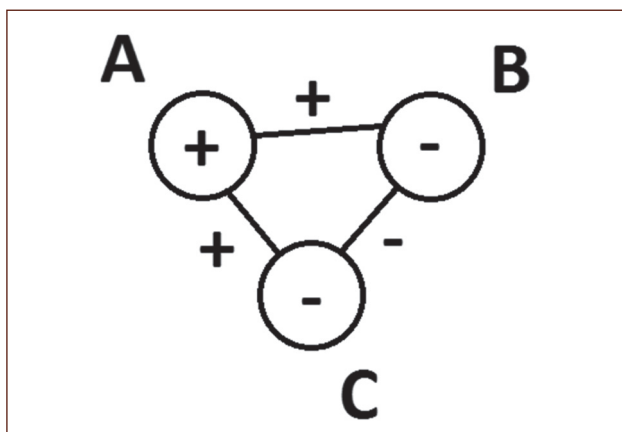


Illustration 2. Two dead information, one living information

Table 4. (Com. = Components; R. = Result of interaction)

Com.	R.	Com.	R.	Com.	R.
A→B	-	B→A	+	A,B	+
A→C	-	C→A	+	A,C	+
B→C	-	C→B	-	B,C	-

c) One dead, two living informations

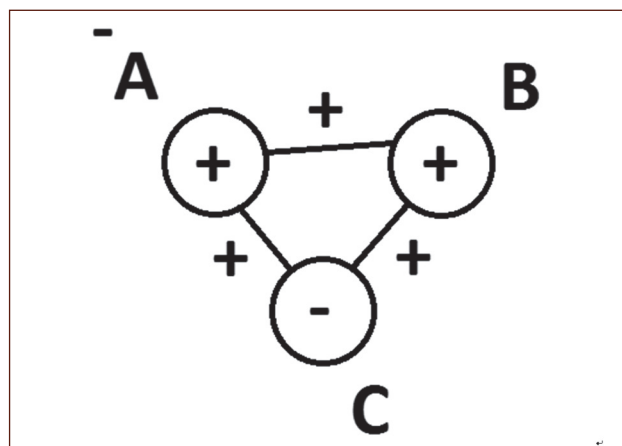


Illustration 3. One dead information, two living informations

Table 5. (Com. = Components; R. = Result of interaction)

Com.	R.	Com.	R.	Com.	R.
A→B	+	B→A	+	A,B	+
A→C	-	C→A	+	A,C	+
B→C	-	C→B	+	B,C	+

d) Three living informations

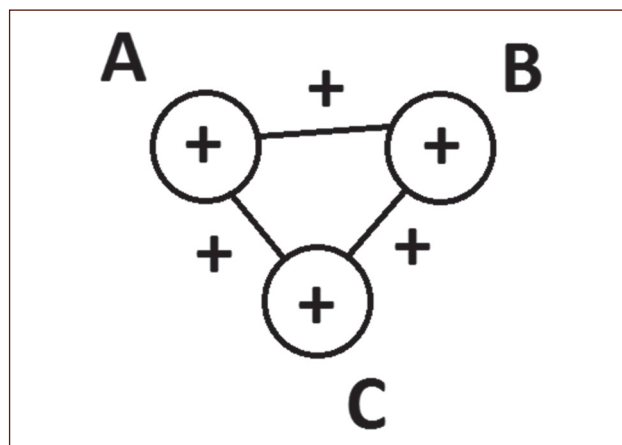


Illustration 4. Three living informations

Table 6. (Com. = Components; R. = Result of interaction)

Com.	R.	Com.	R.	Com.	R.
A→B	+	B→A	+	A,B	+
A→C	+	C→A	+	A,C	+
B→C	+	C→B	+	B,C	+

The number of various combinations depending on the type of informations (dead/living) is given by the equation:

$$n_c = n_i + 1 \dots\dots\dots (3)$$

Where n_c is the number of combinations and n_i the number of information in the system.

4. Conclusion

Informations have the ability to change the nature, with the help of bodies and system that can register it and act in the way the information has „ordered“. There was a need to make this differentiation between those types of information. Namely, not every information has correct data in it so this was something that had to be defined with a paper work. Informations can make systems in which they will affect each other. This conclusion opens the door for new theoretical work in fields of informational physics. However, this means that other types of research including information systems [7] should also be highlighted and forced to make progress in a social-economic way so we can get a full understanding of information systems.

References

1. Alexander Bais F, Doyne Farmer J. *The Physics of Information*. Submitted on 21 Aug 2007 (v1), last revised 18 Dec 2007(v2). Page 2.
2. Pawlak Z. *Information Systems Theoretical Foundations*. Inform. Systems, 1981; 6(3): 205-218.
3. Pawlak Z. *Information systems*. ICS PAS Repts, No. 338, 1978.
4. McGill WJ. *Multivariate information transmission*, Psychometrika, 1954; 19: 97-116.
5. Hu Kuo Tin. *On the Amount of Information*. Theory Probab. Appl., 1962; 7(4): 439-44.

6. Bell AJ. *The co-information lattice*, 2003.

7. Kozic M, Dedic I. *The role of information systems in the process of prevention of tax evasion*. TTEM, 2012; 7(2).

Corresponding Author

Mevludin Licina,

Gymnasium „Rizah Odzeckic“,

Zavidovici,

Bosnia and Herzegovina,

E-mail: mevludinl@hotmail.com

Problems of Iranian Scholars in Writing Papers in English: the Case of Science and Engineering Researchers

Ahmad Moinzade¹, Zohre Kassaian¹, Mahdiye Amiresmaili¹, Mohammadreza Amiresmaili²

¹ Department of foreign languages, Isfahan university, Iran,

² Research center for health services administration, Kerman university of medical sciences, Kerman, Iran.

Abstract

This study has made an attempt to identify Iranian researchers' problems of writing for publication in English journals and their writing/learning strategies they used to overcome these problems. For this purpose, interviews were conducted with sixteen Iranian researchers of science and engineering fields from Shahid Bahonar University. Findings showed their problems were as follows: they had limited vocabulary, they did not have knowledge of advanced grammatical structures, they could not write coherent and cohesive texts and interference of their mother tongue. Learning/writing strategies they used were as follows, reading more and more English papers, writing in mother tongue and then translates it, writing English articles, and noting down vocabulary and expressions.

Key words: academic writing, strategies, non-native speakers, professional researchers

1. Introduction

In recent years, English language has become the language of international politics, business, and academic discourse, and the ability to communicate in English has become largely crucial. The presentation of scientific findings in English is crucial for scientists because even in non-English speaking countries, scientific journals are mostly published in English. In order to succeed in their field, not only do non-English-speaking scientists have to cope with new developments, but they also must master the skills of writing English. Non-English-speaking scientists face enormous difficulties, if they are to succeed in the discourse community through writing research articles [1].

To understand the problems of writing research articles or dissertations, studies using interviews

and questionnaires have been carried out with both experienced (professional researchers) and novice researchers (postgraduate students) working in both English-speaking and non-English-speaking environments [2-8]. These studies illustrate the difficulties shared among non-English-speaking writers, as well as the learning and writing used to overcome their difficulties [2,3,4,6,8].

However, most academic communities contain individuals who are successful in publishing in English, and have overcome these difficulties, so this study aims to focus on the possible differences among 'non-native writers. It would be interesting to examine differences among researchers in a linguistically less advantageous environment, such as Iran where English is taught as a foreign language from secondary school. To show how they survive and succeed when writing research articles, despite their linguistic handicap.

Obviously, writing skills are not the only reason for those who are successful, but by comparing the experiences of these researchers we can perhaps learn a way to bridge the gap between the periphery and the center of the discourse community.

2. Methods

Concerning the objective of this research which studies Problems of Iranian Scholars in Writing Papers in English, a qualitative approach which presents some tools to study these factors and achieves deep and important information of the informants has been taken[9].

Interviewees

Sixteen Iranian researchers(82% response rate) in science and engineering departments in Shahid Bahonar University agreed to an interview. These researchers were chosen to reflect their different

academic experience and publication records. The common feature was that all were actively publishing in American, British, continental European and Iranian English journals in their fields

Interviews: sixteen face to face interviews were conducted in 2011, tape recorded and transcribed, each interview lasting 50-70 minutes. In four cases, interviews were conducted in two sessions due to participants' fatigue. One author (M.A) conducted all the interviews. The interview questions were designed so that they captured experiences, opinions and beliefs of the informants regarding different aspects of publishing in academic English journals. To ensure a better understanding of the context, first three interviews conducted in depth. These helped us to prepare a suitable set of questions for semi-structured interviews.

Analysis: All interviews were transcribed into Persian while listening to the audio-tapes and simultaneously checking with the notes taken during interview. The entire transcriptions were read while listening to the audio-tape for accuracy of transcription. All these Persian transcripts were translated into English by one of the authors (MR.A). However, some portions of the Persian transcripts were translated separately by other authors, and some were back translated to check linguistic reliability and correctness in translation.

Framework method was used for the analysis. This framework consists of five steps of familiarization, identifying a thematic framework, indexing, charting and mapping and interpretation[10-11].

A contact and content summary form was developed for each interview during familiarization process. An initial thematic framework was developed using interviews, prior thoughts. A preliminary framework was developed and then discussed in a series of discussions between the researchers then the thematic framework was checked against the interviews through repeating the familiariza-

tion process, then sections of data were indexed with one or more codes where necessary appropriate, then the coded text was discussed and coding was adjusted where appropriate, this process was repeated several times for all the interviews. We produced one table for each theme and assigned rows to sub-themes and columns to interviewees, then data were transferred on to the tables to produce analysis chart. We compared the views of each interviewee across different sub themes (looking across the columns) and the views of different interviewees about each sub theme (looking across rows). The relationships between sub themes and themes were also investigated. We referred to the transcribed interviews and added extracts to chart wherever necessary. The interpretation of the themes followed an iterative process similar to what explained for the indexing. We obtained verbal consent from the participants and paid no offered no incentives to participants.

Findings

Through in depth interviews, this research identified a range of problems which confront Iranian scholars in writing for publishing in English. These problems are as follows: They have limited vocabulary, they do not have knowledge of advanced grammatical structures, and they cannot write coherent and cohesive texts and interference of their mother tongue.

Learning/writing strategies they use are as follows: Reading more and more English papers, writing in mother tongue then translates it, writing English articles, and noting down vocabulary and expressions.

Although the interviews contain lots of information about researchers' difficulties, perceptions, and strategies, the recurred themes are presented in tables 1 and 2 under two main themes of writing problems and their strategy for learning writing.

Table 1. Summary of participants' comments regarding their writing problems

Problematic areas	Participants' codes	Number of scholars who expressed views on this point
Vocabulary	P1, p2, p3, p4. p6, p7, p10, p12, p13, p15, p16	11
Grammar	P1, p2, p3, p4, p5. p6, p7, p9, p10, p12, p13, p15, p16	13
Coherence and cohesion	P3, p7, p8, p14, p15	5
First language	P2, p3, p7, p8, p10, p11, p14	7

3. Writing problems

3.1 Vocabulary

Nonnative researchers in this study claimed their limited vocabulary is one of their important problems. They said because they did not know enough words so they could not express their claims and ideas with the force they wish: one participants believed: P12: "I have problem with those words which have near meaning and I do not know use of which is more suitable in my study." Or another participants saying: P2: "I almost have no problem with technical words of my major but what make it difficult are general words."

Another interviewee thought living in a non English speaking country make it very hard writing in english: P4: "We are living in Iran. We do not have enough exposure to English which is very important in all areas these days, so compared to native speakers we know very limited words." A participant mentioned an interesting point in this regard: P5: "In some cases when I want to write a text there are some words which I cannot find an English equivalent for them, it is when I have many words for them in Persian." An interviewee felt weak vocabulary overshadow his ability writing academic papers: P9: "If I want to write an essay in Persian, language was not an obstacle, because the only thing I need, is to organize my article not grammar and vocabulary." Or : P11: "Sometimes when I think of an idea, I have just a Persian word for that, but for NSs, when they come up with an idea, they already have the particular term for that, so it is difficult for me at this aspect."

3.2 Grammar

English grammar is the other area that almost all participants mentioned as a problematic area, in this regard a scholar mentioned: P1: "I can write English in simple style but for academic writing it is not enough. You should know, for example how to use adjectives or adverbs which really make your point or your emphasis clear." Lack of good grammatical ability made one participant to write more: P7: "Sometimes because I do not know a structure I try to make myself clear by more explanation, but if I know advanced grammar I can transmit my intention concisely."

Another participant was sick and tired of always paying attention to different grammatical tips: P3: "Tense of sentences, plural and single nouns especially those which are exceptions, make me confused!". An interviewee expressed his discontent with his inability to make his writing as attractive as he wants because of weak grammatical knowledge: P5: "To attract readers' attention your writing should be attractive, which is possible by use of interesting structures and words which are difficult for me."

3.3 Coherence and cohesion

Use of logical connectors which function as signposts, guiding reader through discourse is the other area which the Iranian researchers have problem in use of them in appropriate places in order to make sense in their writings. As one participant believed: P3: "I write with lots of difficulties and I try to write it correctly in the case of vocabulary and grammar but when others read it they cannot grasp the meaning of some parts as I mean."

Similrly another interviewee said: P15: "Writing some paragraphs but not knowing how to relate them to each other, makes your writing meaningless." Or P8: "Moving from an idea to another one and try not to lose the main concern needs lots of effort."

3.4 First language

Persian as participants' first language causes them to make some mistakes in the structure of sentences or choice of words. A scholar belived: P2: "We are not native speakers of English; we are always engaged with our first language." another participant pointed this point interstingly saying: P8: "It is very difficult for me to make a distinction between my first language and second language. Sometimes I write a sentence with Persian structure with a cover of English."

4. Learning/ writing strategies

This part reports main strategies used by Iranian scholars to overcome problems mentioned earlier, they mentioned four main strategies here.

Table 2. Summary of participants' comments regarding their writing/learning strategies

Writing/learning strategies	Participants' codes	Number of scholars who expressed views on this point
Reading English articles	P1, p2, p3, p4, p5. p6, p9, p10, p12, p13, p15, p16	12
Writing English articles	P1, p2, p4, p5. p6, p7, p9, p10, p12, p13, p15	11
Noting down vocabulary and expressions	P2, p3, p7, p8, p10, p11, p13, p14, p16	9
Translation	P3, p7, p14, p15	4

4.1 Reading English articles

Studying articles as model and becoming aware of conventions and organization of published papers in their field was used as a way to increase their ability of writing. One participant believed this improve one's self confidence writing academic papers: P8: "By reading English journals I find confidence to write because most of the writers are nonnative like me; in addition, I can learn scientific expressions." Another interviewee belived in benchamarking: P2: "There are many journals related to my field and they are good sources for learning from other scholars how to write." They just viewd it as a source of getting an idea. P13: "I looked at the structure of articles. This may differ from one paper to the next but to get an idea." Or: P9: "At first I read articles in order to know how to write each part of article, what I should write in any part, it was very useful."

4.2 Noting down words and expressions

The other strategy of interviewees was noting down expressions and words of articles to use them in their works, by this way they can add new words and expressions to their stock of vocabulary. This is a strategy that helped them to acquire accurate and expressive use of language over a more condensed period. For example: P1: "I make mental notes of how to say things and I'm conscious of repeating things that I've seen in texts." A scholar get used to use interesting expressions mentioned in previous papers when saying: P5: "I read international journals and when I come up with an interesting expression which I think it could be useful in future I write it down." this method was in the form of using fixed structure when writing some part of their papers: P8: "When I am writing

some fixed expressions come to my mind unconsciously, may be this is the result of reading research papers. Some writers formulate their ideas very interestingly; I write them down and try to learn from them."

4.3 Writing articles

The other useful strategy as expressed by the researchers is writing and gaining experience from each article that they write and send to a journal for publication. They said each time reviewers and editors comment on their work they learn something and try not to repeat it in the next work. An interviewee using this method, believed that writing problems will be diluted as one writes more: P9: "I think the problems of writing are very much specially in the first experiences, but after a while you are get used to style of writing. You feel that lots of it, is repetitious. I recommend everyone who likes to develop his/her writing skill, do it more and more." Or another participant insisted that: P2: "Just do it. Write as much as you can. After a while you can see changes, and your ability to write will be increased very much." . one interviewee belived there wiil be good news in your way developing your writing skills in this way:: P9:"To become an expert in any field and area you should gain experience. To become a professional academic writer, try to write research papers directly in English and do not worry about your disabilities."

4.4 Translation

Although not a good strategy, writing the whole article in Persian and then give it to translate was used by some scholars to come up with their language deficiencies, although they, themselves confirm this is not a good strategy because

in translation their intention cannot be conveyed as they wish. As one participant mentioned: P3: "I write in Persian, so language is not my concern. I only concentrate on my work when it is finished I think about how to translate it to English." Or P14: "I know my English writing is not well, I read English journals easily but writing my own work with the same complexity is difficult."

5. Discussion

In spite of the importance of getting papers published as the main indicator of the scientists' performance, students rarely get training in scientific writing. The basic features of a paper are learnt by intuition, which may be ineffective and/or inefficient.

As shown in this study, the researchers have problems in English academic writing. The major problem that the participants mentioned is vocabulary. This is because a reasonable vocabulary size is needed for researchers to function effectively in their works. This concurs with Coxhead & Nation (2001) who stated that approximately 2,000 words are seen in most uses of the English language [12]. In addition, Rabab'ah (2003) pointed out that the students often lack the necessary vocabulary when they are engaged in authentic communicative situations such as writing and speaking [13]. As a result, the students will be unable to express their ideas freely and accurately because of their limited vocabulary. These difficulties can be solved by offering more discipline-specific reading courses in order to improve the students' vocabulary size and depth to help them in their academic writing.

Academic vocabulary is a practical tool for learners with academic purposes, but no matter how motivated the individual, acquiring a foreign lexicon is a daunting task, especially if the objective is to achieve a high level of literacy in the target language [14].

Moreover, the findings of the current study revealed that the participants face difficulties in grammar. Grammar is extremely important in conveying accurate messages. Key grammatical forms include tenses, voices, modals, articles, nominalization, and logical connectors [15]. Therefore, it is advisable to restrict these forms and create materials which enable the students

to progress in their academic writing. This coincides with Hutchinson & Waters, who emphasized on identifying the grammatical forms and produced materials that took these forms as their syllabus [16]. Allen & Widdowson [17] stated that the students' needs could be only met by a course that develops the knowledge of how sentences are combined together to make meanings.

Cohesion and coherence are important properties of writing quality. To some extent the types and frequencies of cohesive ties seem to reflect the invention skills of writers and to influence the stylistic and organizational properties of the texts they write [18]. Researchers' disability in maintaining coherence and cohesion in this study may origin from their insufficient knowledge about conjunctive adverbials. Professional writers need to use more conjunctive adverbials because they write longer and more complex sentences. Based on results of this study it is necessary to pay attention to the role of connectors in writing courses.

The majority of faculty identified similar strategies (unconscious or conscious) to support their development as scholarly writers, implemented at their own initiative in an ad hoc manner and involving the emulation of writing in their field. This varied from copying and making mental notes of useful language, to studying model texts for organization and style.

Modeling of writing, and using models of written material have been identified as some successful strategies used by some participants in improving writing in this study.

Negative transfer of first language is another problem of researchers in English writing English. Several interesting findings from the survey also confirm the influence of first language and culture on their writing. Persian culture and structure is different from English and as most of the participants learn English as a foreign language so the formal elements of L1 are used within the context of L2, resulting in errors in L2, as the structures of the languages, L1 and L2 are different. But this influence is not so colorful for proficient writers.

Similarly, Wang and Wen [19] concluded that the lower proficiency writers in their study used their L1 far more than the higher proficiency writers. Wolfersberger [20], who only studied low proficiency L2 writers, also found that they frequently

used their L1 during prewriting and made use of translating from their L1 to their L2 in order to compensate for their limited ability to write in their L2.

Most of the participants of this study try to learn writing themselves and they start their work for publishing papers from zero point. They acquire to write research papers by reading others' papers and noting down useful expressions. It seems this method is too time consuming. Iranian students spend many years in schools and universities in language classes. It is better they learn this skills in educational environment, before they enter academic communities.

Speaking and listening are two skills that are less useful in Iran's educational system, because what Iranian students need for success in their academic fields are reading and writing to communicate with others in world. English courses in Iran should put their main focus on these two skills. The pre-sessional courses are also useful before students enter their academic departments.

When looking at writing problems of researchers at first it seems the only problem is linguistic, but they also need to learn how to produce writing that will satisfy the norms of the academic communities into which they wish to enter. This will involve reaching a satisfactory level of linguistic competence, as well as mastery of the academic writing conventions those communities follows.

If students are to produce writing that will satisfy academic standards, they need to develop an understanding of what such writing involves. Many students have never been taught how to write; and if there are courses on writing, the focus is usually on the product and not the process. Writing in a foreign language requires the transfer of skills from the mother tongue, where they exist, or acquisition of them in the foreign language.

Current study indicated that even when novice writers become experienced writers they still face new challenges and new conflicts. This is because both the value of the community and the rules of the game will be developing and even experts have to keep negotiating their status throughout their life.

6. Conclusion

The results of this study showed that in spite of many years of teaching English in Iran's schools and universities, Iranian students and researchers are unsuccessful in English writing. The success of few numbers of researchers is due to their own motivation and perseverance.

Current study indicated that even when novice writers become experienced writers they still face new challenges and new conflicts. This is because both the value of the community and the rules of the game will be developing and even experts have to keep negotiating their status throughout their life.

References

1. Paltridge B. *Writing up research: a systemic functional perspective*, *System* 1993; 21 (2): 175–192.
2. John MJ. *Writing processes of Spanish scientists publishing in English*, *English for Specific Purposes* 1987; 6(2): 113–120.
3. Parkhurst C. *The composition process of science writers*, *English for Specific Purposes*, 1990; 9(2): 169–179.
4. Shaw P. *Science research students' composing processes*, *English for Specific Purposes* 1991; 10(2): 189–206.
5. Gosden H. *Verbal reports of Japanese novices' research writing practices in English*, *Journal of Second Language Writing*, 1996; 5(2): 109–128.
6. Dong YR. *Non-native graduate students' thesis/dissertation writing in science: self-reports by students and their advisors from two US institutions*, *English for Specific Purposes*, 1998; 17(4): 369–390.
7. Flowerdew J. *Writing for scholarly publication in English: the case of Hong Kong*, *Journal of Second Language Writing*, 1999; 8(2): 123–145.
8. Flowerdew J. *Problems in writing for scholarly publication in English: the case of Hong Kong*, *Journal of Second Language Writing*, 1999; 8(3): 243–264.
9. Rich M, Ginsburg KR. *The reason and rhyme of qualitative research: why, when, and how to use qualitative methods in the study of adolescent health*, *Journal of Adolescent Health*, 1999; 25(6): 371–8.
10. Lacey A, Luff D. *Trent Focus for Research and Development in Primary Health Care: An Introduction to Qualitative Analysis*, *Trent Focus*, 2001.

11. Tourani S, Amiresmaili M R, Maleki M, Hadian H. *An interview study of health care priority setting in Iran, Research Journal of Biological Sciences*, 2009; 4(11): 1193-1201.
12. Coxhead A, Nation P. *Research Perspectives on English for Academic Purposes, The specialized vocabulary of English for academic purposes*, Cambridge: Cambridge University Press, 2001.
13. Rabab`ah G H. *Communication and Linguistic Problems Facing Arab Learners of English*, *Indian Journal of Applied Linguistics*, 2003; 29(1): 127-42.
14. Horst C. *Expanding Academic Vocabulary with an Interactive Online Database, Language Learning and Technology*, 2004.
15. Dudley-Evans T. *Research in English for scientific purposes*, In R. Khoo (Ed.), *LSP: Problems and Prospects*, Singapore: RELC, 1994; 219-231.
16. Hutchinson, Waters. *English for Specific Purposes: a Learning-centered Approach*, Cambridge: Cambridge university press, 1987.
17. Allen JPB, Widdowson HG. *Teaching the Communicative Use of English*, *International Review of Applied Linguistics in Language Teaching*, 1974; 1-22.
18. Amiresmaili M, *Problems of Iranian scholars writing academic papers, MA dissertation in English teaching*, University of Isfahan, 2011.
19. Wang W, Wen Q. *L1 use in the L2 composing process: An exploratory study of 16 Chinese EFL writers*, *Journal of Second Language Writing*, 2002; 11: 225-246.
20. Wolfersberger M. *L1 to L2 writing process and strategy transfer: A look at lower proficiency writers*, *TESL-EJ: Teaching English as a Second or Foreign Language*, 2003; 7(2): 1-15.

Corresponding Author

Mohammadreza Amiresmaili,
 School of management and medical informatics,
 haftbagh highway,
 Kerman,
 Iran,
 E-mail: mohammadreza.amiresmaili@gmail.com,

About Comparative Research of Poems "Treasury of Mysteries" and "Iskandername" on the Basis of Manuscript Sources as the Multiculturalism Samples

Hasanov Elnur Latif

Ganja Branch of ANAS, Ganja, Azerbaijan.

Abstract

In this scientific paper for the first time were investigated the innovative approach of the local literary heritage of Ganja on the basis of various historic sources as manuscripts and archive materials. Have been researched the comparative materials of such poems as "Treasury of mysteries" and "Iskandername".

Also were systematic investigated the importance of these poems of great poet and thinker Nizami Ganjavi in research of historical past of Azerbaijan. In academic paper based on such sources as manuscripts have been researched problems on investigation of basic characteristics of cultural heritage of the ancient East, also some features of formation and historical development of legal culture in society from the point of ethnographic-literary point of view. For the first time by author were researched the problem of similar socio-cultural features in these poems on the real samples from the different manuscripts and archive sources.

Dialogue culture between Eastern and Western civilizations and multiculturalism values were investigated on the basis of comparative study of these literary samples. Have been proved, that Nizami Ganjavi told about the importance of protection of dialogue culture between nations as the main element of the peace.

Key words: Ganja, ethnography, Azerbaijan, literature, ancient national traditions, manuscripts, archive documents, multiculturalism.

1. Introduction

The genius poet and philosopher later known as Nizami Ganjavi, whose works would profoundly impact the literary school through awakening the

spirits and thoughts of mankind for centuries, was born. Nizami Ganjavi long ago became more than a descendant of Azerbaijan. His timeless verses rank among the most valuable wealth of mankind, while he himself reached the pantheon of history's most exalted descendants. While alive, Nizami Ganjavi was confident of the eternity of his works, writhing the following:

*When asked a century later where is it?
Each couplet would call out: "Here I am".*

Not one, but eight, centuries have elapsed since then, yet the vitality of Nizami reaches beyond the temporal borders of his clairvoyance, leading the way to eternity. A genius German poet emphasized the value of high modesty by pointing to seven great poets (Ferdowsi, Anvari, Nizami, Sadi, Rumi, Hafez, Jami) distinguished within Persian-language poetry: "Even though the East has given the biggest advantage to only 7 of its poets, there are a lot of poets superior to me among the rest of the preferred ones" [1].

2. Theoretical basis of the Research

2.1. Innovative approach to the research of heritage of Nizami Ganjavi

Nizami's name was Ilyas, However, certain sources claim that his name was Ahmad (for example, the source entitled "Khulasat al-afkar" notes his name as Ahmad ibn Yusif Muayyad). Nizami is a nickname of the poet. His pseudonym was Nizam ad-din. In the medieval Moslem East there was a tradition of indicating kunya, the son's name, along with the name of famous persons. The kunya of Nizami is Mohammad. In his vari-

ous hemistiches the poet speaks to his son Mohammad through admonishing him.

From his first poem to his last, Nizami repeatedly brings the name of Ganja to his hemistiches. And one of these couplets is an excellent riposte to those trying forcibly to extricate Nizami from Ganja and artificially connect him to other places. Seemingly responding to all these a few centuries in advance, he states his permanent belonging to Ganja:

*My secrets-my words coming from my spirit are
made obvious,
Though he is taken to Boukhara, his origin from
Ganja.*

Certain sources (for instance, Dovlatshah Samargandi, the 15th century) inform about Nizami's brother Givami Mutarrizi. The literary relics written by Givami Mutarrizi that we possess today attest to his high skills in the genre of qasida-masnavi, as well as his overall poetic talent and savvy poetic technique. However, we lack definitive scientific evidence regarding the native brotherhood links between Mutarrizi and Nizami [2].

2.2. Academic problems of investigation of "Khamsa" on the basis of new archive materials

Meanwhile it is hardly accidental that we mentioned this contentious couplet relating to the place of birth of Nizami. Throughout history, along with those seeking to claim ownership of many Azerbaijani values and territories, there have also been people attempting to appropriate the genius descendants of Azerbaijan, and such attempts are happening to this day. During Nizami's era, two languages – Arabic and Persian – dominated science and literature in the near and Middle East. All scientific works were written in Arabic, while poets from a diverse range of nationalities in Central Asia, the Caucasus, Iran and India crafted their literary heritage in a single language - Persian. With clear command and knowledge of information in the most varied fields of science reflected in his works, Nizami demonstrates that he is a highly-educated person. His earliest known verses indicate his high poetical techniques. And this is evidence of Nizami's engagement in poetry not as

an amateur but as a genuine professional, someone who perfectly mastered the theoretical basis of this art from the very beginning. The canons of that age necessitated, first of all, perfect command of Persian and Arabic in order to master such a wide range of universal knowledge [3].

Nizami wrote his seminal works "Divan" and "Khamsa" in Persian. Referring to the observations of the prominent Iranian scholar Saeed Nafisi, in spite of his fluency in and perfection of Persian, Nizami does not belong to ethnic Persian Nizami's verses. Moreover, in several instances, to specify the precise meaning of Persian words Nizami appeals directly to the explanatory glossaries of the Persian language:

*The catapults have two types with reference to the
glossaries –*

One throws silk, other one throws the stone.

2.3. Comparisons between poems of the as the historical-literary source "Treasury of mysteries" and "Iskandername"

Nizami was made Nizami as such by his "Khamsa", composed of 5 masnavis-poems which enshrined him in literature. "The Treasury of Mysteries" ("Makhzan ul-Asrar") written in 1178, "Khosrow and Shirin" written 1180, "Leyli and Majnun" dedicated to love story and completed in 1192, "Seven Beauties" ("Haft paykar") written in 1197 and "Iskandername" consisting of two parts – "Iqbal-name" and "Sharaf-name", completed in 1202. In fact Nizami combined these five works under a single title. Had Nizami lived longer he probably would have written several more poems, upping his body of work to 7, 8 or 9 poems. Nevertheless, his lifespan coincided with the time required to craft these five works, and the theorists who noticed the organic linkage of these five works, as well as the wholeness of the conception (which started in "Treasure of Mysteries") in "Iskandername", initially combined these five works under the title "Panj ganj" – "Five treasures". Subsequently, these two words were replaced by the more compact Arabic word "Khamsa", meaning "quintet".

Treasury of mysteries

The Story of Sultan Sanjar and the Old Woman

A poor old woman, harassed and in pain
 Came to Sanjar the Sultan to complain:
 She said: "You have no justice, you offend,
 Your club-law and your cruelty have no end.
 Your drunken steward came to me, the lout,
 Kicked, knocked me down, till he was tired out.
 He seized me by the hair – an innocent old crone,
 And dragged me, heeding neither cry nor moan.
 A crowd flocked round, he swore at me, the brute,
 Abused, reviled me, hard blows following suit.
 He yelled: "You hunch-backed hag, you'd better tell
 Who killed a man quite near to where you dwell?
 He searched my house in hope of finding there
 The murderer... O master, is that fair? [4].

Or:

ISKANDERNAME

Fragments from the arrival of Iskander in Barda and his Encounter with the Queen Nushaba

Oh, wine-bearer, bring me a cup of your exquisite
 wine,
 It is for the thirsty spring giving water divine.
 I feel all aflame and my thirst rouses terrible pain,
 O brings me some wine; let me drink till no remnants
 remain.
 Barda!..what a beautiful country! A wonderful sight:
 In spring and winter the flowers are fragrant and
 bright,
 In summer the tulips and poppies with scarlet tints
 glow,
 In winter the breezes of spring-tide caressingly blow.
 A garden as lovely as this one is not to be found,
 Nor also a land likes Barda, where these riches
 abound.
 An eminent narrator tells us a wonderful lay,
 A lay that in eloquent wording survives this day:
 The fair Nushaba reigned here – queen of this land
 superfine,
 A patron of feats rich in delicate sweetmeats and
 wine.
 This female jeyran would have none of the mascu-
 line race,
 And rivalled the gorgeous pheasant in beauty and
 grace.

An eloquent talker, unyielding, and wise and sincere,
 In figure of a goddess, with temper of kindness and
 cheer [5].

The ideals which Nizami propagated eight cen-
 turies ago remain desirable today. Humanity is
 presently fighting for domination of the features
 Nizami wished to see human beings and society.
 The city Nizami depicts in his final poem – in
 "Iqbal-name" part of "Iskandername" actually
 was the society he dreamt of and wished to see
 implemented. Along with other world genius who
 served a kind of global school, Nizami has clear
 stake in the overall progress attained by mankind
 from Nizami's time until now.

3. Methodology

3.1. Life and activity of Nizami Ganjavi as the important source in investigation of academic problems

Sources mention different dates for Nizami's
 death: 1180 (Dowlatshahi, Haji Khalifa, Ham-
 mer Purgshtal, F.Erdman), 1199, 1200 ("Atash-
 kada", "Tarihe-jahanara", G.Auzly), 1202-1203
 (V.Baher, E.Brown, C.Ryeau) and so on. Never-
 theless, a commonly accepted date is
 March 12, 1209 (in 1947 it was written on the
 stone over Nizami's grave as follows: 4 Ramazan
 605 Hijri).

Due to his being not only a poet but also a for-
 midable scholar standing one degree higher than
 other scholars of his period, Nizami was deemed
 a "physician" – owner of wisdom. Even though
 the indicated period abounded with geniuses, only
 two others in addition to Nizami were honoured
 with this title: Ibn Sina and Omar Khayyam.

As was noted, in his poems Nizami passion-
 ately speaks of his son Mohammad, born in 1174.
 It is unknown who Mohammad's descendants
 were and whether he had grandchildren and great-
 grandchildren. Nonetheless, other descendants of
 Nizami – the fruits of his pen – have remained as
 crisp and alive as they were eight centuries ago.
 The profound power of the word is captured here.
 In the following couplet, Nizami admonishes his
 son Mohammad:

I notice in You the desire of being superior
 I observe in You the habits of poetry.
 Nevertheless, do not hold on the art or poetry
 As the nicest of it is the one lying most of all.
 Do not seek for fame in this art (poetry)
 As this art comes to the end with Nizami.
 Though the verse is higher for its position
 You had better be engaged in definite useful science.

Certainly, the wise Nizami was well aware that the beginning of verse did not relate to him and it would not end with him either. So why did he deter his son with obvious poetry signs from this way? As a consummate professional, he wished to see his son as a poet of at least Nizami's caliber. Meanwhile, he probably realized that being Nizami is a miracle which would not fall to the lot of everybody. Therefore, he exhorted his son, who would not be a stronger poet than he, to take up clearly required area of science [4].

As Nizami proposed the related formula:

*Good pack-saddle making
 Is better than bad hatting.*

3.2. Importance of historical sources and documents in research of comparative parts of poems

Shortly thereafter, in the XIII century, the initial chain of responses to these five poems were born. In India, Amir Khosrow laid the foundation for the Nizami School by creating the first quintet in response to Nizami's poems. That is to say, through creating the response "Khamisa", Amir Khosrow also defined the formula of responding to Nizami: plot, characters and basic principles should be preserved; the responder should manifest his skills in mode of expression, artistic style and word polishing. Even though the doors of all palaces were open to Nizami during his lifetime, he remained outside the palaces. He preferred his calm and free life to everything. Nonetheless, his own door was open to everyone, and he invited everyone to step inside and benefit. As a matter of fact, the invitation Nizami made 8 centuries ago is in effect nowadays as well, the benefits of opening the door available to all:

Do not shut my door to anybody,
 As it not good behavior to shut the door to someone.
 As the word named us "ocean",
 Our door should be open like the ocean.
 Enable the seekers to come,
 And see the door of the King of poets.

Though time destroys even the most magnificent royal palaces, the word "palace" for Nizami gets more fresh, shining and attractive instead of atrophying, defying the logic of time as it increases its age. Probably, the initial reason for this is encapsulated in Nizami's verse created in the name of humanity and respect and love for mankind.

*The person hewing the human sculpture from stone
 Can but only wonder at human beings!*

He says these words as if to himself. As Nizami constantly marveled at human beings and worshiped mankind's defining traits, he could have hewed eternal human sculptures from the word.

*If you are human then mix up with the people,
 As the human suits the human, the human fits the human.*

This idea-principle of humanism makes up the nucleus of Nizami's literary work. Nizami sets forth this supreme idea from his first verse up to his last one, and from his first poem to his final one. Regarding readability, Nizami is one of the most complicated authors of the medieval period. It hardly stands to reason that Nizami's language is difficult to understand. Despite the fact that Nizami crafted his literary heritage eight centuries ago, his language is little different from contemporary Persian, except for a number of archaic words. Comprehending Nizami is complicated by his intricate work on each hemistich and couplet, as well as his propensity for expressing multiple meanings of words in each hemistich and couplet, imbuing each line with several layers of meaning. Therefore, one cannot simply skim through Nizami. Each hemistich and couplet, as well as every word and phrase in each line, must be read repeatedly, in order to discover new semantic layers and comprehend the general sense of the fragment in line with the discovered meanings.

The unprecedented ability of expressing the word with magisterial power is not only something which makes Nizami a world-class poet. It is just one the terms which ensure the genius of Nizami. Nizami was a broadly read person. He had not limited himself with solely Turkic, Arabic and Persian sources. As he noted he was aware of diverse Christian and Jewish sources. Knowing several languages enabled him directly to read those books.

Samples:

TREASURY OF MYSTERIES

The Story of Sultan Sanjar and the Old Woman

O mighty Shah! I writhe with dreadful pain,
To God you'll answer should my cries be vain.
You have no mercy; you're unjust, unfair,
Your club-law is a torture, hard to bear.
A shah should grant his people bounty, grace,
Whilst you defile your honor with disgrace.
To rob poor orphans – that's no valiant deed,
I see the sequel to your acts, indeed! [4].

Or:

ISKANDERNAME

Fragments from the arrival of Iskander in Barda and his Encounter with the Queen Nushaba

A bevy of comely young maidens surrounded the Queen,
They stood in a round and created a picturesque scene
Besides them, the Queen had trick-riders and many a knight,
Great numbers of warriors presented a marvelous sight.
Although they were men in attendance, the prop of her reign,
Yet none of them ever set foot in her private domain.
The kingdom was governed by women with masterly skill,
To men she would never in person give word of her will.
Men housed in the outskirts, ne'er settled to live near their Queen,

And chose for their homesteads vast meadows, delightfully green.

In fear of her wrath none would venture to enter the town,

They loved Nushaba for they knew of her wondrous renown.

Whenever she ordered to corves the men would forsake

Their homesteads to labor, all ready to die for her sake.

When King Iskander with his legions appeared in the land,

The tents of her war camps were countless, her army well manned [5].

4. Conclusion and Recommendations

In this scientific paper on the basis of academic materials, manuscripts samples and archive sources has been determined:

- Nizami was born in Ganja, a renaissance city, and he was among those who founded and immortalized the Oriental Renaissance through his personality and work [6].
- This famous thinker described the actual problems as gender equality in poems of "Treasury of mysteries" and "Iskandername. This innovative scientific argument was proved on the basis of literary samples from these works.
- Have been researched the problem of study of traditions of public (state) administration based on the comparison of historical facts from such literary parts from poems as "Arrival of Iskander in Barda and his encounter with the Queen Nushaba" and "The Story of Sultan Sanjar and the Old Woman".
- Dialogue culture between Eastern and Western civilizations and multiculturalism values were investigated on the basis of comparative study of these literary samples. Have been proved, that Nizami Ganjavi told about the importance of protection of dialogue culture between nations as the main element of the peace.
- Nizami was a genius who projected his humanism beyond national borders, as clearly evidenced by his choice of main

characters of his masnavis. His hero can be Persian, Arabian and Greek. The aim of Nizami is not captured by the nationality of the hero or character. The purpose is to find the supreme literary solution of the idea. However, neither the choice of main characters nor the representation of dozens of nationalities throughout his poems is unintended. Nizami does so intentionally. Thus he once more demonstrates that he writes about and for human beings, and that the readers of his works should be not one nation but many nations. And consequently it happened exactly that way. Nizami is one of the most widely-translated classics in the world. What's more, ever newer languages will join the ranks of these languages. Through his works Nizami not only founded a literary pattern to be repeated over centuries, but also the pattern for building ideas, nations, morality and states.

- f. Nizami Ganjavi, a person embodying the wishes of everyone, belongs to all. He is eternal because he belongs to everyone. Nizami will always be one step ahead of us, navigating towards a serene future.

Today, many locations and monuments have been named and dedicated to the great Azerbaijani poet Nizami Ganjavi – in Azerbaijan's capital, Baku; in his hometown of Ganja; and all over the world, in major cities such as Moscow, St Petersburg, Derbent, Cheboksary, Beijing, Acapulco, Kishinev, Luxembourg and Rome. Institutions, streets, squares and metro stations have all been named in his honour.

References

1. Bodenstedt F. *Mirza Schaffy im Liede und in der Wirklichkeit* (1872). In: *Daheim*, Jg. VIII, Leipzig, Nr. 16: 244–248; Nr. 17, 262–266
2. Gəncəvi N. *İskəndərnamə, İqbalnamə, (Zümrüd Quluzadənin ön sözü ilə)* Bakı, Lider nəşriyyat, 2004; 256.
3. Babayev X B. Nizaminin “Xəmsə”sində *Quran ayələri və Qissə motivləri*. Bakı, Elm. 1999.
4. Khamsa N. *The Treasury of Mysteris, Tabriz*. (London, British Library, Or. 2265) 1539-1543.
5. Khamsa N. *For Yagub-bey Aq-Qoyunlu. “Iskander-name”*. Shiraz. (Moscow, IOS, D-212), 1453.
6. Khamsa N. *Seven Beauties*, Shiraz, Moscow, SMOA, f 155, 1491.

Bibliography

1. Khamsa N. *Khosrov and Shirin, Bukhara* (Moscow, SPL, NPV, 66), 1648.
2. *Osmanlı Devleti ile Azərbaycan Türk Hanlıkları arasındaki ilişkilere dair arşiv belgeleri* (1992). Cilt, I (1578-1914), Ankara, İE.DH. 5 492 1012 Ra 07 I, 23-25.
3. Herzfeld E. *Iran in the Ancient East*. (3rd ed.), London: Cambridge, 1941.
4. *The dawn of Art, Leningrad: Aurora Art Publishers*, 1974.
5. Əhmədov F M. *Gəncənin tarix yaddaşı*, Gəncə: Elm. 2007.
6. Гаджиева В. Место аллюзии в поэтической структуре текста. *Низамиведение*, 2015; 5: 14-19.
7. Gəncəvi N. *Sirlər xəzinəsi*, Bakı, Azərnaşır, 1947; 174.
8. Məmmədova M N. *Nizami Gəncəvi dilinin leksik üslubu (İskəndərnamə əsəri üzrə)*. Bakı, Nefta-Press, 2012.
9. Gəncəvi N. *Sirlər xəzinəsi (Tərcümə edən Xəlil Rza Ulutürk, ön söz və elmi redaktor Xəlil Yusifov)* Bakı, Lider, 2004; 264.

Corresponding Author
Hasanov Elnur Latif,
Ganja Branch of ANAS,
Ganja,
Azerbaijan,
E-mail: l-hasan@hotmail.com

Designing and Examining Multimedia Based Application Using Visual Basic on Early Literacy Learning

Rahmat Hidayat¹, Seny Luhriyani Sunusi², Yusni Nyura³, Andi Anto Patak², Muhammad Tahir²

¹ Department of Information Technology, Politeknik Negeri Padang, Padang, Sumatra Barat, Indonesia,

² English Department, Fakultas Bahasan Sastra, Universitas Negeri Makassar, Makassar, Indonesia,

³ Politeknik Negeri Samarinda, Kampus Gunung Lipan, Samarinda, Indonesia.

Abstract

The need of quick, accurate, and efficient information is expected in all human activities. To obtain the needed information, multiple methods and media can be used. One of the reliable media is computer. A computer user can use more than one senses to run a multimedia-based application, especially to see, hear, and touch. Teaching and learning process of letter, number, and colours' recognition as well as vocabulary games using multimedia based application is expected to help pre-schoolers to attract them to learn while playing and leading to early literacy learning. This application is designed according to pre-schoolers' needs and support the flexible learning. This application made learning of literacy through multimedia based application more interactive and quickly understandable.

Key words: Teaching and learning; multimedia; pre-schoolers.

1. Introduction

Multimedia based application as computer assisted instruction is considerably meaningful for preschool education[1]. Teachers believe that multimedia can support the early literacy learning [2]. Users of this application can use more than one sense while running a multimedia-based application. For example, when a user run the media with her/his hand to use the sense of touch and she/he uses senses of sight and hearing that can work simultaneously. Thus, this advantage is noticeably valuable tool in education field. In the creation of multimedia based application, it is expected to assist the pre-schoolers to improve their ability to recognize letters[3]. This application is designed based on the pre-schoolers' need to attract their interest to learn while playing. The place and time to support

the use of this application is wide open. It can be used at classroom as media for teaching and learning in the teachers' control and at home as media for enhancement learning in the parents' support.

Preschoolers education is an education level that should be based on the specific strategy of teaching as the target of recipient information is children ages 2-5 years. It is vitally important presenting easy media to support enjoyable teaching strategy in order enable them to understand easily what the teacher explains[4]. It requires a unique media that can help sharpening their five senses to enrich the intelligence of thinking as well as a strong memory of what they have heard, seen and experienced. Multimedia-based applications is considerably good media in teaching and learning for children ages 2-5 years. Preschoolers are expected to learn and play by the time they are required learning to see, hear, and touch as the basic of learning readiness[5].

Language program of visual basic 6.0 software is basically understandable to programme even by people who are just learning to create multimedia based application[6]. It is easier again after the presence of Microsoft Visual Basic, built on the idea of simple scripting language for a graphic user interface that was developed in the Microsoft Windows operating system. Visual Basic is a programming language which is very easy to learn with visual programming technique that allows users to create better at creating an application program. This basic of creating multimedia application using visual basic is 'form' in which user can adjust the display of 'form' to run in script easily. The widespread use of Visual Basic is considered by the feature to interact with other applications within the Windows operating system with ActiveX control. By this component, the programmer or user

can make and use all the existing data model in the windows operating system. This is also supported by programming techniques in Visual Basic which adopts Visual and Object Oriented Programming. Visual Basic 6.0 is actually the development of previous versions with several additional components, which is commonly used today due to the feature of Internet programming with Dynamic HyperText Mark Language (DHTML) as well as some additional features and multimedia database are getting developed. Visual Basic is still leading to an application program due to the ease of the application development process[7].

2. Designing Multimedia Based Application

The designed multimedia based application using Visual Basic 6.0 has general specification as an interactive CD in which a set of software is designed to be a driver that serves as the media for teaching and learning [6]. Therefore, the interactive CD is made as attractive as possible, starting from the arrangement in terms of animated colour, the language used in the 'education games' and audio that can attract the memory and imagination of children. In addition, the design of multimedia based application is more directed to design of animated multimedia based application as tutorial CD on teaching and learning of Alphabet for pre-schoolers.

a) Interface of Visual Basic 6.0

Designing interface required the feature of ease to access [8]–[10]. Interface of Visual Basic 6.0 provides menu, toolbar, toolbox, form, project explorer, and property that enable teacher to design simple interface as in the following Figure 1:

Making an application program using Visual Basic 6.0 is done by making the display on 'form', and then create script program within the required components. 'Form' is designed by components that are in the toolbox, and the properties of any components must be set up in the 'Property' window. The 'menu' in visual basic is the operational standard in the windows operating system, such as creating a new form, create a new project, and open and save the project. In addition, there are features on making visual basic in the menu. Microsoft Developer Network provides Visual Basic the complete and detailed help.

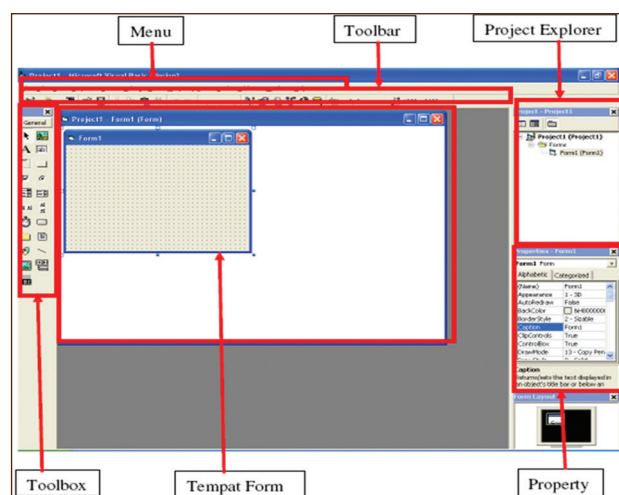


Figure 1. Interface of Visual Basic 6.0

Toolbox contains components that can be used by an active project, meaning that the contents of the components in the toolbox is highly dependent on the type of project being built. A component standard in the toolbox can be seen in the Figure 2 below.

b) Designing the Interactive CD

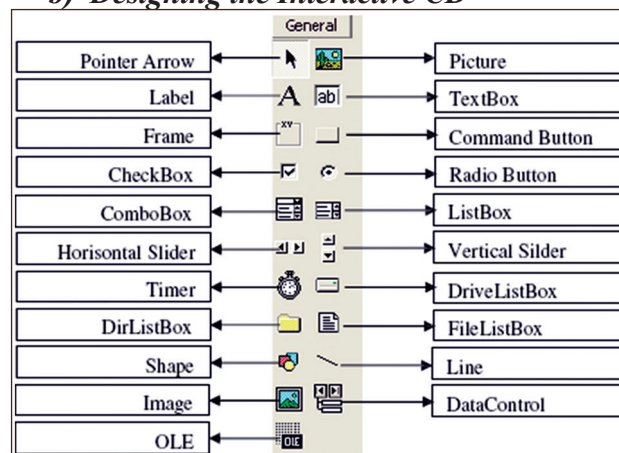


Figure 2. Toolbox

In an interactive CD-package, the programmer can set up some forms that will make it easier for users to use and learn the provided learning materials. Besides, the interactivity can help teachers the educational value of CD Package [11]. All the learning materials used for designing interactive CD is obtained through direct observation to educational institutions that provides special teaching and learning for pre-schoolers. This paper provides the structure of designed forms as follows:

Form 1: In this form 1, the sound 'welcome' is presented as the opening sound. In the main dis-

play, the designed forms or syntaxes were shown as 'Home' menu on multimedia based application of teaching and learning for pre-schoolers. In the 'Home' menu, there are several options menu that can be selected. The options include forms of, letter, number, and colour recognition as well as games for brain exercise. In the main display, the designed forms or syntaxes were shown as 'Home' menu on multimedia based application of teaching and learning for pre-schoolers. In the 'Home' menu, there are several options menu that can be selected. The options include forms of, letter, number, and colour recognition as well as games for brain exercise. The following figure 1 showed the 'Home' display.



Figure 3. Home Display

Form 2: In this form, the alphabet is displayed. Each letter is introduced by showing a picture to further facilitate the children to remember each letter by displaying images of animals or objects from the first letter in the highlight. The Figure 4 above showed the twenty six letters. This form comprises a display of alphabet with sound 'Ayo belajar ABC'. This feature can train preschoolers' to see, hear, and touch simultaneously [5]. This is also the basic for preschoolers to learn reading [3] and as the support for literacy learning [2].



Figure 4. Letter's recognition form

Form 3: In this form 3, the series of numbers which are attributed to letter and sound based on the clicked number, were introduced to children. This displayed 10 digit on numbers. This is in the spirit of early literacy learning [2] by introducing not only letters as in Figure 4, but also numbers as in following Figure 5. The sound is also being provided, so that preschoolers can see the number, hear the sound, and touch the mouse for learning to see, hear, and touch [5].

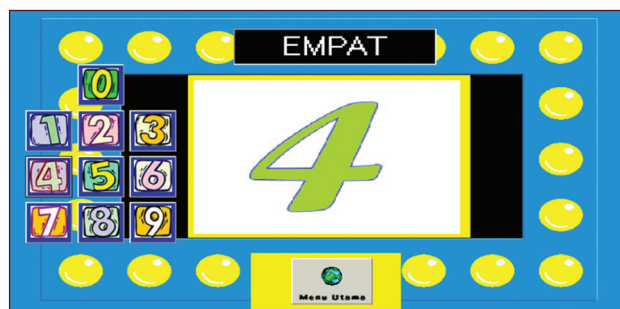


Figure 5. Number's design form

Form 4: In this form, the child is given the freedom to know the colour. When children start to feel bored, the following colour form can be showed. Pre-schoolers can learn to know colours without getting bored. In this form, preschoolers are being trained to know the color and exercise their memory. This is a challenge for teachers to appeal and students' cognitive processes[12]. The sound is also being provided to enable the pre-schoolers to learn to see colour, hear the sound, and touch the mouse to click the suitable button [5]. This is also can be used by teachers to teach early literacy [2] to teach pre-schoolers how to read [3].

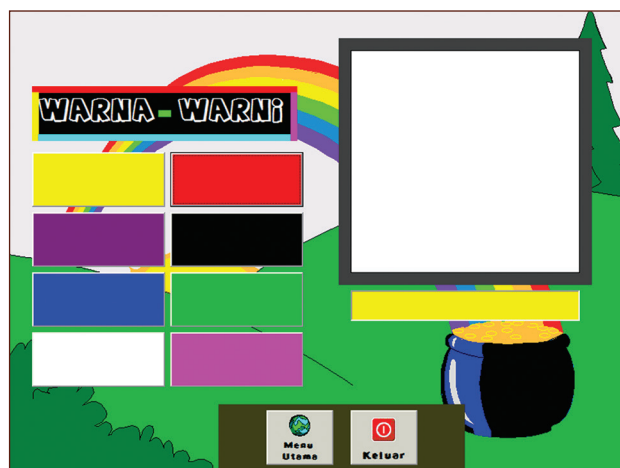


Figure 6. Colour's recognition form

Form 5: Form 5 contains a game that sharpens the pre-schoolers' ability to think and remember what they have learned as it has been previously exercised. In this form, pre-schoolers can play while learning. This is the dynamics of teaching using multimedia for friendly and adjustable learning[13]. By looking at the fruit, pre-schoolers learn to see, listening to the sound, they learn to hear, and clicking the related fruit picture, they learn to touch [5].

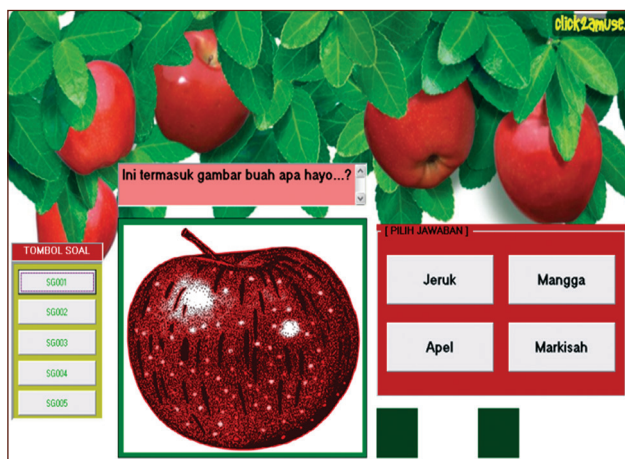


Figure 7. Guessing picture form

The sound feature of this multimedia based application is also expected to be a memory game to train the child ability to remember. Children can be trained to remember or analyze a displayed image. Obviously, by this image, teachers can teach the preschoolers early literacy learning [2]. These are the advantages of teaching and learning through multimedia based application [14], [15].

3. Examining the Multimedia Based - Application

Fifteen preschoolers in South Sulawesi were tested. They responded the questionnaire at the end of one day training on multimedia based-application for early literacy learning. Figure 3 (home display), Figure 4 (letters' recognition form), Figure 5 (numbers' design form), Figure 6 (colours' recognition form), and Figure 7 (guessing picture form) were tested in this study. The researchers ticked their responses in a form for making preschoolers focus to enjoy playing the multimedia based application. The responses by the preschoolers were presented in the following Figure 8.

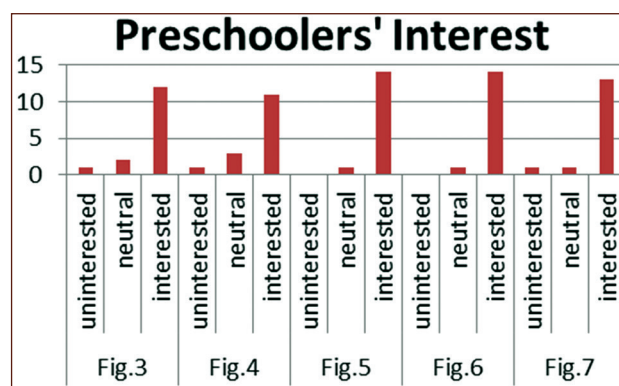


Figure 8. Pre-schoolers' interest on multimedia based application using visual basic

Figure 8 above showed that most of the pre-schoolers were interested in multimedia-based application using visual basic. Figure 3 (home display) showed that there were only one pre-schooler responded 'uninterested', two of them chose 'neutral' and twelve of the respondents chose 'interested'. Figure 4 (letters' recognition form) attracted pre-schoolers' interest indicated by only one person chose 'uninterested', three of them were 'neutral', and eleven of them were 'interested'. Numbers' design form as in Figure 5 above showed that none of the pre-schoolers responded 'uninterested', only one was 'neutral', and fourteen were 'interested'. Similarly, Figure 6 (colours' recognition form) showed the high interest of the pre-schoolers on this feature. None of them chose 'uninterested', one was 'neutral', and fourteen were 'interested'. Finally, Figure 7 (guessing picture form) showed that only of the pre-schoolers were 'uninterested' and 'neutral', while thirteen of them were 'interested'.

4. Conclusions

This study showed the high interest of pre-schoolers on using multimedia based application as an effort to introduce them to learn literacy earlier. The easy display of 'visual basic program' contributed to the success of making pre-schoolers are interested in early literacy learning. Using multimedia based application in an interactive learning system. Preschoolers can quickly recognize letter by letter through this interactive media. This interactivity feature enables the teacher to assess the pedagogical value [8], [11]. This application is considerably suitable for preschoolers because children are required learning to see, hear, and

touch [5]. Children can also be simultaneously introduced to the world of computers starting from moving the mouse to run the multimedia based application for early literacy learning [2].

References

1. Vernadakis N, Avgerinos A, Tsitskari E, Zachopoulou E. *The use of computer assisted instruction in preschool education: Making teaching meaningful*, *Early Child. Educ. Journal*, 2006; 3(2): 99–104.
2. Segers E, Verhoeven L. *Multimedia support of early literacy learning*, *Comput. Educ*, 2002; 39: 207–221.
3. Emery D G. *Teach Your Preschooler to Read*, 1975.
4. Dabbagh N, Kitsantas A. *Supporting Self-Regulation in Student-Centered Web-Based Learning Environments*, *Int. J. E-Learning*, 2004; 3(1): 40–47.
5. Blaustein M. *See, hear, touch! The basics of learning readiness*, *J. Natl. Assoc. Educ. Young Child*, 2005.
6. Halvorson M. *Microsoft Visual Basic 6.0 Professional Step by Step with CD-ROM*. Microsoft Press, 1998.
7. Petroustos E. *Mastering Visual Basic.Net*. Sybex Inc., 2002.
8. Shi S. *Computer English Teaching Model Based on Multimedia Platform*, *Int. J. Emerg. Technol. Learn*, 2016; 11(8):59.
9. Tidwell J. *Designing interfaces*, O'Reilly Media, Inc., 2010.
10. Hu H. *Teaching Model of College English Using a Computer Network*, *Int. J. Emerg. Technol. Learn*, 2016; 11(8): 9.
11. Aldrich F, Rogers Y, Scaife M. *Getting to grips with 'interactivity': helping teachers assess the educational value of CD-ROMs*, *Br. J. Educ. Technol.*, 1998; 29(4): 321–332.
12. Bonnardel N, Piolat A, Le Bigot L. *The impact of colour on Website appeal and users' cognitive processes*, *Displays*, 2011; 32(2): 69–80.
13. Koumi J. *Designing video and multimedia for open and flexible learning*, *Science (80-.)*, 2006; 237.
14. Collins J, Hammond M, Wellington JJ. *Teaching and learning with multimedia*, 1997.
15. Mayer RE. *The Cambridge handbook of multimedia learning*. Cambridge University Press, 2005.

Corresponding Author
 Rahmat Hidayat
 Department of Information Technology,
 Politeknik Negeri Padang,
 Padang,
 Sumatra Barat,
 Indonesia,
 E-mail: rahmat@polinpdg.ac.id
 mr.rahmat@gmail.com

Quantum economy as ethical - political thought of economic balance

Kostadin Pusara¹, Maja Loncar², Jasmin Jaganjac², Aleksandra Pusara³

¹ United Nations Peace and Development University, Belgrade, Serbia

² International University Goražde, Bosnia and Herzegovina,

³ MA, economic sciences business development specialist, Qatar.

Abstract

Throughout centuries of changes, countries have reached a stage of becoming economic and military corporations and in 21st century through processes such as globalization and regionalization. If we are to compare ancient monarchies and modern economic-military corporations, geography is not an obstacle any more, and the sovereignty of countries is directly related to economic and military power territorial units, not necessary countries. Globalization and regionalization would represent an ideal model providing “common good” but when perceived from the capitalistic approach it could have very negative consequences for a great portion of civilization who already suffer from absence of freedom and wealth, while ownership and capital is being consolidated in several centers of power.

The goal: This paper is to point out the questionable interpretation of terms globalization, regionalization, money, currency, macroeconomic framework and resources, as well as to indicate direct cause of instability of all markets globally, which if not treated surely take us to world economic collapse. Another aspect that will be introduced is the transformation of the states into privatized corporate-military territories. Ethics and responsible behavior being the base of the Quantum Economics surely is almost only option as a response to chaotic pyramidal development funding. Ethical - political thought should suggest solutions and possible balance (economic balance), which man strives for, all for the sake of survival.

Key words: globalization, economy, regionalization, money, fiat currencies, responsible behavior, conscience, development, wealth transfer, common good, science, consumerism, corporate-military states, quantum economy, ethical - political thought of economic balance.

1. The development of civilizations and clash of modern consciousness

According to effective educational economic thinking and the centuries-old economic activities according to this principle, it is important to notice that most of the material values are created in the past hundred years, and after the uncontrolled development of civilization declared itself as the only possible choice. The owners of these modern values were different, depending on the social order. In capitalism those people would have been individuals, while socialism insisted on society as the owner of the value or capital. Both arrangements are completely completely dialmetrically opposite in their basis, they did not have the same market conditions, and to prove that is still the case, there is the fact that in many technologically-advanced countries the population is still being intimidated by introducing socialism.

Socialism [1], by its nature of collective property, was to be the dominant social and economic structure considering that it directly promoted “the common good” or collective happiness, as part of social justice as the ultimate goal, while, accordingly, capitalism [2], insisted that the owners of capital are individuals, or “individual good” or individual happiness where social justice is not the backbone of development, but the financial cost is. One would expect that socialism will overwhelm the world with its idea of the common good and equality, especially because socialism was arrangement of the crowd which has no reason to put the pressure on the competitive development and regulation of capitalism that favors the few and feasible only if the majority is working for individuals’ interest or for explained development purposes.

Therefore, it should be concluded that both the setups created by two opposite types of consciousness; one that favors the modern bourgeois

elite, while the second type of consciousness tried to concentrate on the social balance, which has never, because of ethics of promoters of socialism themselves, been accepted in its true form. In fact a large part of the civilized consciousness is deprived of part of the future of equality. In addition to their differences both directions are promoting the development of social consciousness of civilization through technological development for different accounts.

The idea of development began in the previous century, certainly was not presented in a form in which we are experiencing it today, because if it did it would never have been accepted. It seems that the concept of development hides secret intention in its essence.

If we were to explain today's development in one sentence, it would not make a mistake to say that we are moving towards the humanization of robots and robotization of people. There are so many beautiful new terms to explain the vanity gaps. It seems that the term development presents completely new questions: Who favors the development? What is the role of civilization in the new world?

2. The Misconceptions of globalization, planned crisis and theoretical senseless rendering of science

Time and freedom are two basic goods which one aspires to. Time, sacrificing freedom one once had, is being stored in the money that will be used according to the needs. Money should thus represent freedom and be of the same value as in the time of creation and the time of use.

Modern socio-economic practice shows no signs of such a promise of economic prosperity, due to the achievement of economic thought of the 20th century where the money is equal to the term of the currency; paper currencies are built to the US dollar value from the late 40s of the 20th century, in the post-war era, haven't got the same value at the time of creation and in the time of spending. Therefore, and real and nominal value of the currency is still lower at the time of spending due to constant deflation, as a result of imposed consumer trends, and its direct resultant inflation artificially made in order for us to supposedly revive the economy. Such a textbook example of a mod-

ern economy and its range is present in the overall world economy called modern business.

The paradigm that is associated with this model is that the value does not depend only on production, but it can be created from the financial instrument, which in the modern world is only an illusion of capital. Therefore, no economic result cannot be measured with money, because it has always been a result of the cost, since all economy-funded non-existent money became economy loss from the start.

Deductive way of thinking, it seems that the currency steal the first time from a man, eventually getting his freedom. The best example is the US dollar, which has lost 95% of the value from 1913 after the FED [3], was established as the Central Bank.

The link between the FED [4], and the value of the US and all other currencies plays an important role in addressing the current global monetary crisis, as in a very special way the vast majority of countries had to hand over management of the central banks to regional / continental communities that resemble the state, but basically not countries like the European Union.

According to the above, there is no a theoretician who could explain what is actually the European Union, or who controls it, as it is presented as domination-government without a constitution and control of the selection of personnel, as well as related decisions. Domination governments are by unifying countries wiped territorial boundaries, taking away the monetary and the legislative role of the Member States, making them a dependent in all decision-making processes.

As a legacy of globalization process of abolishing borders, domination governments entitle themselves to eliminate geographical boundaries for the sake of movement of capital, strengthening the private owners of capital, and gradually stultifying state authority.

In addition to removing the barriers, globalization enhances the unpredictability of market making it very interesting, especially if we know that the current mechanistic theories [5], are based on very different, even opposite postulate.

The invisible hand of the market has gained a few more small arms beyond theoretical or practical control, and yet there is someone influencing on the creation of these unpredictable hands. Glo-

balization, as a new religion of imperialism which aims to create a corporate power, is an experiment that affects the people and economic awareness; **either the states will become a corporation, or the corporation will become a state.**

At first glance, it seems the same, but ethically there is a big difference, the difference which Karl Marx tried to explain to contemporaries, and to those later, that the social ethics is the test in which capitalism will fall.

Pursuant to the above, ask yourself the following questions: Where are the limits of capital in globalization? When and how to protect the new frontier? Is capitalist notion of regionalization, actually transformation of national, geographic territory in corporate regions? Is the interest of the corporation and the civilization the same?

The economy under the influence of capitalism as the economic system (as it does not consider the consequences it has on the society, cannot be called social) experiences global transformation.

Capital is gradually passed into private hands by developing new geographic markets, products and brands, private funds and individuals have become owners of brands, and brands have become a leading international performance characteristics classification of countries' economy. States that are its brands, and brand owners. As a result of privatization (including countries in transition, where it is particularly important), the trend of economic diplomacy of the states is to protect the interests of individuals, or capital that these individuals possess.

From the standpoint of initiation, the investment and the development of economic policies are put in the new position of negotiator on behalf of private capital. For the states in transition that is the new way of thinking, while for the capitalist states it was the basics from the beginning where the capital of the state was a corporate or non-state, and the security and military apparatus of the state subordinated capital; anytime, anywhere and translated into contemporary language that is political and economic interventionism.

Perhaps out of misunderstanding or rejection of dialectical change of socio-economic conditions on which as individuals we cannot influence, the overall change of the system face only logical fierce resistance in countries in transition.

3. Property ethics

In the past, private property was a means to limit the power of rulers and its despotism, while today the owners of capital are the rulers of the world. It seems that the ethical balance between capital and government disappeared. Although during thousands of wars the property changed its owner, so until the beginning of the 20th century, it could be said that the majority of people lost everything, the vast majority has got something, but only a few somewhat larger capital. Today this attitude is completely different.

The military aspect of the expansion of economic ideas is very important; the boundaries of the national economy are defined multilateral agreements between the states, while the territories managed by corporations gain independence regardless of the existence of the state. This is another example of how globalization directly through regionalization affects the disintegration of the country.

Commercialization of scientific knowledge started at the beginning of the 20th century turned the development of science from the true target segment, regardless of the means necessary for the enlargement of capital. In fact, without globalization and regionalization of the corporate capitalist, neoliberal and similar thoughts would not be able to survive. Preparing the theory of macroeconomics, J. M. Keynes [6], (Johan Maynard Keynes), while praising the effects of the invisible hand of the market, just pointed out that the only market's weakness is "action by government to businesses".

Keynes thus in theory introduces postulate that capital **must never go** from a private owner which takes permanent human right to freedom and survival neocapitalists.

Therefore, the role of the state in the economy is exceptional, while in capitalist and transition economies it is completely irrelevant, actually more like a team marketing agency that is not working for the interest of the state, although the state pays, but the interests of capital owners, who are becoming owners / financiers of the country. Thus despotism [7], in transition has become sought-after destinations.

Exposing both aspects of regionalization, it remains on the individual to pursue his/her own opinion, and the reality is that perhaps neither interpretation is correct. Who and what wants to

achieve in this way? Is the idea of regionalization misused? Does the capitalist economy affect the abolition of the state? What is the product of unrealistic economic and political action?

4. State, I am it [8]

The process of incorporation and state takeover occur with the empty money; countries, as regulatory elements, in that way state cease to exist and they lose territorial and control system of the state territory or population and resources, and become a transitional medium for purely governmental structure in the military-economic units managed by individuals.

If we consider the corporatization of state on the one hand, the question arises, which direction would be the counterpart of, that is, which direction will introduce the balance of the unjust balance of power. Anathemized socialism is certainly not the answer to this situation, but quantum economy [9], could represent a new beginning.

Scientific materialism has not found it necessary to explain the fact that it is possible that today's natural and social science content is not in harmony, or that there is a clear difference that leads to social change or growth to be infinite, while in natural science, researchers, however, distance themselves from the endless possibilities phenomenon and its interpretation. For example, in medicine cancerous diseases are characterized by infinite multiplication of cells in the body. According to natural analogy, infinity of economic processes is certainly not possible.

Not so long in history, we would say that each country aspired to macroeconomic stability [10]. Greater role of the state is accepted in the economy and special attention has been given to fiscal policy. It was believed that the state budget deficit policy can stimulate economic growth and savings could calm down possibly overheated economy. This sentence made sense until there were national economies protecting equally all participants in a given geographical determinant and working for their own interests, but how the system works in "regions" where the owners of capital are individuals, with the ability to influence the development, and the devastation of the observed territory is difficult to express in financial value.

In line with the forecasts published in the very criticized book "Limits to Growth", it is expected that phase stages of a global collapse will begin and that the total resources will be reduced by 80% by the end of 2100 [11].

Given that resources will not be enough for all the necessary and unnecessary goods, a significant economic problem will begin to increase after 2020, when the food, service and industrial output will be moving headlong towards creating a negative sign because the price of resources will grow rapidly, not creating a sufficient level of profit or reducing the level of industrial products.

In this state of absolute chaos, the level of the population is also falling, rather starve, because the material-oriented society, a man of the future age, neither has the money to buy goods, nor has an option to earn it. The book written in 1972, describes in detail the daily life of the second decade of the 21st century. "Human species", or "human race failed the exam because it did not understand the exponential function." [12].

5. Capital and ethics

The state always possesses the capital. There is no state without capital and as such it is interesting for the economic acquisition and governing. Moreover, if there is a theory by which the acquisition or the privatization of the state is being legalized then the acquisition is a process by which the transfer of wealth is performed in an instant. The lack of ethics as a notion of Capitalism raises many social and ethical issues on the good intention. Without guessing or unnecessary theory, two simulations of the same process in which ethical norm and the role of the state in the protection of the civilization's future are being set up.

Let one of the examples of the ways in which private capital could influence the development of the socio-economic level of citizens in capitalism be the establishing of the minimum wage. If the state was governed by responsible people who wanted to protect their citizens and the purchasing power on the market, private investors would not be favoured and the work price that the workers negotiate with the Ministry, the trade union and the investors would be somewhere in the range between minimal and middle wages, whereas the

banks would help the citizens to be credited by middle interest rates [13] from the capital that did not exist, namely from the future debt that would create inflation. The capital that would be used for the crediting of citizens and the economy would partly come from the capital deposited on the banking accounts (legal obligation imposed by the state) and in its greater part from the emission of currencies, namely the workers would start to obtain credits either based on their own money which they are forced to get via their banking accounts or in its even greater part from the emission of the inexistent money launched on the market. Based on the in-depth research of the population on the financial education conducted in 2006, OECD had the initiative of the widespread education of the population among their member states with the aim of highlighting (and not preventing) economic theft of the orchestrated political elite for their own benefit.

“Research conducted for the OECD’s study on financial education indicates that the level of financial literacy is low in most countries, including in developed countries. In Japan, for instance, 71% of adults surveyed knew nothing about investment in equities and bonds, while surveys in the US and Korea found that high school students failed a test designed to measure students’ ability to choose and manage a credit card or save for retirement.” [14].

Elite is thus able to gradually “legalize” the fact of appropriation of the wealth of the nation with a message that the system is not in question, but that the masses are uneducated, so if already as such, then their decisions and flawed.

Recognizing that, neither economic theory nor practice does not positively influence the survival of the world economy, completely contrary to “Keynesians,” Bernard Schmitt [15], dating the fifties of the last century, sets the ethical criteria of income and money, contributing to the establishment and development of the theory of quantum economics. Because the economy is not an unnatural phenomenon that is impossible to look at and control, it is more natural, limiting process.

By observing Economics and Business, as well as recognizing the shortcomings of the real economic system, Shmitt offers a new philosophical, socio-economic definition of the **fundamental principles** of the “amended” understanding of

not only intent, but also the ethical and material consequences of existence. According to Schmitt in the basic issues of macroeconomics are related to levels of employment and production, inflation and economic growth, where growth, prices, employment and export development support. The condition of the macroeconomic growth is creating mutual sustainability, sometimes conflicting development components. With the emergence of globalization, global market conditions are affecting developing components, and the predictability (political, resource prices, the volume of production and consumption, ...) is reduced; sometimes by the international politics, pollution, and sometimes by technological innovation. Yet despite these wresting factors, there are monetary mechanisms by which these factors could be reduced to the minimum level. The management of monetary, and other risks becomes the starting point of the reform. Quantum economists emphasize that the inflation is the effect of abnormal accumulation of capital of **macroeconomic disorder that has no origin in the behavior of economic agents**.

The root of the problem is in the accounting systems of banks, which are not in accordance with the logical difference between money, income and basic capital, and they create space for the generation of inflation.

Overall worse effect occurs due to the accumulation of capital elite, while a “humanitarian” and the deposited funds will be transferred to the state as long, so the states could continue to lead the country at the same time and take care of a population that all unjust debt should return [16].

This is an example of the best practices of capitalism, and the United States are its best representative, whose debt increased in trillions of US dollars.

Continuing with the example of the impact of capital on the socio-economic situation, we look at the opposite of the condition; if the state is led by reckless people without sincere will to protect its citizens, negotiators will establish the minimum, unethical labor costs without ethical resistance of the state, because it is not logical that the state weakens the market for production and goods, and strengthens financial markets and indefinitely putting the population in debt without their real opportunities to pay the debt back, the debt they have not created [17].

This example is seen in more than 50 countries in the world, it is our reality.

Irresponsibility or corruption as the tip of the iceberg is the silent and legalized problem of socio-economic practices [18].

Utter example of irresponsible behavior, represents a fairly complex system of disorders that are asynchronous behavior and then throw out all other systems and the very economic system out of balance. Completely unnatural process, not only from the quantum point of view, but also from ethical viewpoint.

Consumerism [19] (bearing in mind the current economic market) is therefore very complex socio-economic ideology whose morality or ethics must be at the highest level, as it promotes the idea of an ethical idea generated in the material, neglecting the existence of a source of happiness and spiritual satisfaction, necessary for development of emotional intelligence. In what direction the society is moving if the social basis, empathy, related to the products, which are the sources (referring to the building block products) limited? Is there apathy of humanity ahead of us or we will have plenty of time to get used to the good old intangible values and will these old-new values reward this quantum society properly, again?

It is completely illogical thesis which means consumerism as a process in which consumers dictate the economic structure of society. In fact, from the standpoint of practice it is incorrect and does not mean anything; and how to understand the message that does not mean anything?

Will the humanity eventually get one manager? The answer is in each of us. Ethical.

Constant violation of ethics of the common good and modern problems of humanity are numerous, some of which are certainly the largest in sustainability: **demographics, natural resources** (for which we do not know neither how they occur, nor how many there are or what their role in the preservation of our planet is), **the entire industry, the biosphere, the universe** ... which represents an asynchronous system that will certainly endure unforeseeable change unless major consolidation of knowledge and importance of preserving the quantum universe are not undertaken, which certainly cannot be equated with the term sustainability.

6. Development the cover of the greed

The new redistribution of wealth that is happening is the largest so far. Wealth can never disappear; it only changes the owner, so that in every crisis there is also opportunity. Some financial analysts believe that the best investment in the future is the investment in knowledge of how the economy functions out of the education system, because financial education system does not offer the option of equal opportunities in the real market.

In fact it complicates and deceives the fact that the economic prosperity is not possible, and every 10 years or so the economy is falling deeper and deeper into recession and periods of inflation which is “removed” by printing fiat currency [20], until it again sinks into recession.

In a university education not a single book or books in which banking scheme clarifies the future of economic leaders has been introduced. Given that people’s future time is already taken away by the hard work on the virtual markets, the freedom proportionally follows the trend, and is being replaced by modern economic slavery. Such disposal to tackle the problem by solving the greed of banks, led us to the new, the largest ever seen global crisis since the Great Depression, in 1929, which is about to start. The system of currency if missused can become a means of enslavement of civilization. We are witnesses to the fact that instead of keeping the value of the currency, purchasing power is actually reduced, so that the ethics of money or currency, in the mildest terms, is in question.

If we look at the ratio of gold and paper money, uniqueness, and potential fraud of the state and the banks lies in the fact that gold cannot be reproduced, but everything may be printed in any amount. In the analysis of the US economy, it has been shown that the performance of gold is nearly 600 times [21] outperformed the Dow Jones index in the period of ten years, but gold has not suffered feature of legitimate goods by which economic growth is compared.

The logical question is why the obvious mathematical derived potential is not taken into account. Perhaps because there would be no more fiat currency, or “empty money” and in that way redistributing wealth would be manipulated.

By reciprocity the state governments would be restricted in their spending of public money and the money they do not have, because they are not able to reproduce the new funding. Only in this way the uncontrolled growth could be reduced to the level of used values, not greed for the creation of large fortunes.

None of today's world currency is not covered by gold, that is its value, and the total world production is financed by fiat currency. Thus, technological development, as the needs of people for freedom and future time, is funded by fiat currencies or non-existent money, so it is untenable to any deadline, and it leads to economic collapse subtracting the real and the nominal value of money, or purchasing power [22].

So the first economic problem is the world monetary system; current economic thought supports the creation and accumulation of problems. In addition to the currency problem, there are problems of inflation, deflation, privatization or control of central banks by private banks for the sake of printing volume of currency, and increased state budget funds investing in non-production sector.

This whole situation is comparable to a wolf which keeps the interests of the sheep. The working class is depleted, but it is "developing", and the bank with its interest rates on currencies that they do not have, or out of the wages paid to workers, finance the interest of the individual; workers are able to follow the imposed consumer trends, buy a new car, a cell phone or a new apartment, but not with the means that they have earned, because the money they have is less and less valuable, but with the money they do not have, and the bank does not have that money as well.

7. Conclusion

Under the influence of a complex and uncontrolled development, the whole world is constantly changing, so it is unquestionable and transformation and disintegration of the country in the military-economic units or digital future of the monarchy.

Managers of companies become rulers of life, and life becomes controlled by economic cost. The absence of ethics and the desire for power have led us to the end of the process of modern changes. The role of civilization has been reduced to the

ability of cheap production in almost impossible conditions of life.

Domination government, organizations, corporations are synonymous with new control systems that manage the politics, economics and territories. It is logical that in this case the state systems that relate to the preservation of the corporate system work for the benefit of corporations, not civilization. The interest of civilization and the corporation is completely contrary to the long term.

Capitalist economy has as its aim to overtake permanently the state territory, that is, its privatization taking away economic and social balance. Old traditionalist economies were the economics of recycling, whereas the capitalist economy is the economy of dissipation.

We are in a time that some call the "great reversal", and that it is time for a comprehensive systemic change. These changes can be implemented in ways that would create a "sustainable system of plenty for all."

We can learn from the shortcomings of the existing system, as our new systems later avoid slipping into "dead end" in which we are currently stuck in.

Quantum economy as the thought of the economic equilibrium occurs for centuries in various forms and with theorists of various scientific profile.

It is the ethical-political thought of economic ideas, its spirit does not aim to create more wealth, but to create equal economic environment and create lasting value through responsible behavior that will allow the survival of the planet, because whether we like it or not, we have the responsibility for everything that we do. **This new thought is to be true by understanding the problem of today, has to propose solutions and provide balance to which humanity aspires to.**

The total system of ethics, values, economics, and all other walks of life should be reformed for the sake of survival.

Taking into account the current economic and social systems, some of which are totally alienated from the harmony of the cosmos, scientific thesis introduction of quantum thought as a new platform introduces the new discoveries that can provide sustainable economic activity, and in defining the development of "post oil" companies.

The remedy for such a situation is dehomogenisation market behavior, ie. to let companies, banks

and individuals to self-regulate in order to survive in the market. This distinguishes a good business practice and bad one disappear. In contrast, it homogenizes the behavior control. When a practice is established by centralized control, the possible error is imposed to all. The regulation prevents competition business practices.

This theory does not provide a lot of opportunities to accumulate wealth and questionable development, but it will try to explain the principles of a sustainable economy, which certainly will not support unethical greed of individuals embodied in the quasi-economic theories.

Consequently, there are more and more requests for open communication transparency, redistribution of wealth and an effective democratic system in which all take part.

Unlimited growth is simply not possible, and people are more motivated to change their behavior and to create systems that are sustainable and less harmful to the human race and our planet.

References

1. <https://hr.m.wikipedia.org/wiki/socialism>
2. Capitalism - wikipedia; <https://bs.m.wikipedia.org/wiki/kapitalizam>
3. <https://sr.m.wikipedija.org/wiki>; <https://hr.m.wikipwdia.org/wiki>
4. Federal Reserve - the Fed; Cromalternativemoney.org/28.ekonomija
5. Diogenes - prokultura mangazin; <http://diogen.weebly.com>
6. Maynard Keynes J. Wikipedia; <https://hr.m.wikipedia.org>
7. <https://sh.m.wikipwdia.org>
8. Louis XIV of France - Wikipedia, <https://sh.m.wikipedia.org>
9. Đogo M. Quantum economy in RS, column, Independent news 13.07.2014.; www.nezavisne.com
10. Tasić S. Economic theories and crisis, magazine Nin, 19.03.2015
11. Turner G, Alexander C. Guardian, 04.09.2014; www.Lupiga.com
12. Kovačević I. Modern viewpoints, publisher European center for political, economic, social, security, sociological and criminal research, Banja Luka, 2012.
13. Tasić S. Economic theory and crisis, magazine NIN, Belgrade, 1995; 3.
14. <http://www.oecd.org/finance/financial-education/37087833.pdf>
15. Schmitt B. Sovereign debt and interest payments, in C. Gnos and S. Rossi (eds) Modern Monetary Macroeconomics, Cheltenham, UK and Northampton, MA, USA: Edward Elgar, 2012
16. Kovačević I. Modern viewpoints, publisher European center for political, economic, social, security, sociological and criminal research, Banja Luka, 2012; 122.
17. Ognjanović R. The crisis bottomless; Causes Crises- Katalaksija; 09.03.2014.; <http://katalaksija.com/2009/11/18/uzroci-krize/>
18. Pušara K, Jaganjac J. Corruption and its impact on the economic development of the Western Balkans in the process of European integration, International Scientific Conference; Belgrade; May, 2016; 13.
19. www.jesenski-turk.hr
20. New monetary systems for sustainable democracy; Great upheavals 1/2 of 02.08.2013.; bif.rs/2013/08/new-monetary-system...
21. Kurtović S, Đurović-Todorović J, Stojiljković B. The attractiveness of investing in gold as a safe asset; Economic Horizons; Beograd, 2010; p.155-171.
22. New monetary systems for sustainable democracy; Great upheavals 2/2 of 05.08.2013. years; bif.rs/2013/08/new-monetary-system...

Bibliography

1. Abramovic V. Metaphysics and cosmology i kosmologija of scientist Nikola Tesla, 2009; www.kpv.rs
2. Yi C, Cude B, Swagler R. Country of Origin Effects on Consumer's willingness to Buy Foreign products: An Experiment in consumer Decision Making, published in Consumer Interests Annual, Volume 50, 2004.; www.getd.libs.uga.edu/pdfs/cai_yi_200208_ms.pdf
3. Marx K. Published writings <https://www.marxists.org/srpshrva/biblioteka/marks/1844/ekonomsko-filozofski-rukopisi/predgovor.htm#Bb>

4. Marx K. *Grundrisse, The Pelican Marx Library: Harmondsworth* 1973.
5. Meadows HD, Meadows DL, Randers J, Wilam W. Behrens III, *The limits to Growth, Universe Books, 1972.*
6. *The new monetary system for sustainable democracy; Great upheavals (1/2 02.08.2013.; bif. rs>2013/08> new monetary system...*
7. *The new monetary system for sustainable democracy; Great upheavals (2/2 05.08.2013.; bif. rs>2013/08>new monetary system...*
8. Pušara K, Loncar M. *New paradigms of economic diplomacy in international businesses, international scientific conference, PIM Univerzitet Banja Luka, 2014.*
9. Pušara K, and others. *Corruption and its impact on the growth of poverty in the world; International scientific conference; Novo Mesto, Slovenia, 2014.*
10. Pušara K. *The Serbian economy facing the challenges of the new world order; International scientific conference, Faculty of Law, Novi Sad, 2016.*
11. Radovanov Z, Matić M, Tesla N. publisher TV Studio Beckerek, Novi Sad, Srbij 2007
12. Schmitt B. *Inflation, chômage et malformations du capital. Macroéconomie quantique, Paris and Albeuve: Economica and Castella, 1984.*
13. Urbonavičius and Justina Gineikienė; *Sigitas, Importance of the Product Country of Origin Factor on Purchasing Process in the context of Globalization; izdavač: Ekonomika, ISSN 1392-1258, 2009.*
14. OECD, *Policy Brief, July 2006.*
15. www.jesenski-turk.hr

Corresponding Author

Jasmin Jaganjac,

Federal fund for supporting the areas affected by natural disasters on the territory of the FB&H,

Sarajevo,

Bosnia and Herzegovina,

E-mail: jasmin.jaganjac@gmail.com

The effect of organizational conflict on organizational entrepreneurship of students sport clubs in Tehran

Mohadeseh Fallahi¹, Fariba Mohammadian²

¹ Islamic Azad University Eslamshahr Branch, Physical Education, Iran,

² Islamic Azad University of Qazvin - Department of Physical Education, Qazvin, Iran.

Abstract

One of the main branches of entrepreneurship is organizational entrepreneurship that has significant role in success and development of organizations. Organizational entrepreneurship means development of qualities and opportunities inside the organization by compounding different new sources, which may optimize growth and renovation of a traditional organization. Organizational conflict is one of the behavioral obstacles for organizational entrepreneurship. Correct management of conflict results in creation and renovation that is, according to Shompitere, the first function of entrepreneurship. The present paper aims to determine the most influential conflict management strategy for entrepreneurship and define the appropriate model for it. After considering the theoretical fundamentals, five styles of organizational conflict management in student sport clubs are being studies. The population includes all coaches and managers of the student sport clubs in 22 regions of Tehran. Eight regions are chosen by clustering randomly, and then the questionnaires are distributed among clubs managers and coaches. Totally, the whole number of people participated in the study were 80 people each of whom answered three distinct questionnaires of demography, Putnam and Wilson standard questionnaire of organizational conflict and ($\alpha=0.83$) and Marguerite Hill organizational entrepreneurship questionnaire ($\alpha=0.85$).

The study is a practical research and data gathering method is causal-comparison. Data are analyzed in SPSS as well as variance analysis and LISREL structural equations. The results show that organizational entrepreneurship of student sports club in Tehran has the average of 182.37 (out of Max.209) and SD=23.38 and the organi-

zational conflict has the average of 119.89 (out of Max.151) and SD=13.64. Accordingly, we can conclude that solution-oriented strategy which includes conciliation and cooperation styles has significant effect on organizational entrepreneurship ($P<0.05$). Standard impact factor is 0.64 that illustrates considerable effect of solution-oriented strategy on organizational entrepreneurship, based on which the research model is developed. Solution-oriented strategy affects organizational entrepreneurship positively or directly.

Key words: Organizational Entrepreneurship, Organizational Conflict, Student Sport Clubs.

1. Introduction

The present economic – social systems developments rooted in the progress and changes of the sciences and technology that caused changes in performing tendencies and interests. Undoubtedly, the current organizations confronted with international threats and developments; thus, survival and life guarantee of the organization requires new methods and solution for solving the problems in order to result in innovation, creating and development of new services, processes and methods. Therefore, the managers shall consider the roles which are appropriate with the environmental developing conditions.

Entrepreneur is to be mentioned as economic motor and development engine, which is in fact the major factor of creativity and innovation [1].

In 1955, Rapo & Hunt made a special classification for entrepreneurship behavior that includes the following:

1. Detection of offer
2. Opportunity facilitation
3. Motivation to pursue [2].

The organizations, on one hand, shall be capable of creating conditions, background and mechanisms for orienting their process to innovation and development, and on the other hand, they shall provide the situation for final success of the proposed ideas and access the concept of entrepreneurship [3]. One of the pioneer organizations in the field of students' physical education in Tehran Province is students club that has important role in education and recreation, completing sport and basic skills training, providing appropriate practice opportunities and fulfilling leisure times. It may facilitate talent-search process, students training and sport guidance in different fields as well as efficiently affect sport elites development to achieve honor for our dear homeland. Specifically, nowadays when international competitions for youth have stronger and integrated form and the countries and civilizations tend to compete in this field.

But the question is that why students club has weak role in meeting such effects? The manpower activates in clubs has different interactions which result in conflicts. Today, the conflicts are unknown that are controlled by rules and regulations [4].

Conflict is an unavoidable matter and a part of organizational life which is the concern of most managers, such conflicts management is one of the cases which requires considerable time and energy of the managers. Conflict correct management makes competition and creation and innovation, as the result [5]. In order to reach entrepreneurship, one shall obviate the obstacles. One solution for the problem of entrepreneurship obstacles is selecting a correct management which makes competition motivation, distinguishing differences and logic variations as well as developing strong motivations for the staff of each organization. Therefore, we need effective methods to have good and appropriate conflicts, the methods that create novel thoughts, creation and innovation in the field of human resources function.

At current time, sport clubs are divided into the ordinary and special ones, which employ some coaches, their activities create wonderful potential. Therefore, we should provide condition for them not to perform their duties just based on rules and on force, but they could enjoy their activity and show professional genius. Hence, student clubs may act as a supplementary for the course

of physical education and a potential for substructure of the championship sports of the country. The main question of the research is that whether the organizational conflict in students club affects organizational entrepreneurship or not. And what is the best conflict management strategy in clubs?

2. Review of literature

It has been about two decades passing since the first serious plan of entrepreneurship in the country's performing and scientific sessions and special importance has been concerned for this case in IR Iran social and economic development outlook. However, it seems that the basic and fundamental concepts in this field has not been researched and expressed correctly though Iranian researchers and scientists have tried to develop the theoretical principles of entrepreneurship in Persian texts [6], thus, the organizations always look for new complex of sources to provide serious advantage for themselves. This is the point where the importance of creative manpower and in other words organizational entrepreneurship glorifies.

The appropriate background for entrepreneurship activities in organizations and outside environment which supports such activities are considered as the most important factors for entrepreneurship organization [7].

Organizational conflicts are an unavoidable matter regarding the inter-personal and inter-organizational interactions. Correct management of conflicts make field of competitions and as the result creativity and innovation [5].

Sport sciences and physical education knowledge have important and valuable place in international educational systems, today, as the schools course plans considered helping students in different skill, social, emotional, mental and physical fields with providing necessary opportunities for them. Moreover, they impact positively on their progress by educating the students' personalities.

On the other hand, the results of research in the field of physical education course status in schools and the condition of movement and physical fitness of the students verifies this fact that the hours of this course may not help achieving higher objectives of sport and physical education only. Therefore, the planners and authorities of physical education in

educational systems shall provide other possible approaches for these objectives, of which we may mention, strengthen and development of students sport clubs [8]. Regarding the appropriate and educational situations, students' sport clubs have the required conditions for training the students physically, but the problem is that this optimized solution has not met the satisfaction of the related authorities, yet. So, the importance of the present study magnifies according to the importance of the role of entrepreneurs and organizational entrepreneurship in society and sport organizations like students club and the enthusiastic students in such clubs as well as the shortage of studies about the effect of organizational conflict on organizational entrepreneurship. Lack of proper approaches for coaches and managers of sport clubs results in traditional and subjective management in this field. As a result we observe wasting financial, materials and human resources for the education. Therefore, the researcher tries to achieve suitable solutions to reach productivity of such resources. The results of this research plan may be used to present appropriate solutions for increasing the productivity of sport clubs.

Very less researches attempt to test organizational entrepreneurship in practice. Thus, the effect of organizational conflicts on organizational entrepreneurship only roots in theoretical studies.

Kuratko & Hodgetts in a research, titled "entrepreneurship, a contemporary approach", named floating in works, problems with others and need for success as entrepreneurship contradictions sources [9].

Hayton in a study, titled "entrepreneurship promotion of companies by human resources management, expressed the effecting factors on organizational entrepreneurship with focus on the role of human resources management that includes socialization, group-working training, function evaluations, risking persuasion, trust and organizational citizen behavior and intra and inter-organizational communications [10].

Karlis in a study, titled "the future of leisure times, recreation and sport in Canada" illustrated lack of qualified managers and performing conflicts as the most important problems of entrepreneurship in sports [11]. Bilikopf in a research, titled the skill of conflict management, expressed the differences, challenges and opportunities and said

that comprehending the viewpoint of each staff and making rules for better communication, effective interaction and power equality are very important [12]. Chaudhry and et al in a paper, titled conflict management strategy of Telecommunication Company Staff in Pakistan, ascertained that there was a significant difference in the strategy applied by conflict management among staff and the adult ones had more tendencies for using force strategy [13].

Mirzaei Ahranjani & Moghimi in a study, title presenting organizational appropriate model for private organization with entrepreneurship approach, examined opinion differences among staff, management and management will about different styles in order to achieve the organization's objectives as functional conflicts and illustrated the results of significant correlation test between organizational conflict functional level and organizational entrepreneurship in private organizations [14].

Moghimi in a research, known as organizational entrepreneurship comprehensive model in Iranian private general organizations, allocated a specific share of entrepreneurship behavior factors to examination of tension and conflict in organization. The results of the study showed that in many private organizations, thoughts movements and tendency diverse were used for achieving the organization's objectives [15]. Bahiraei in a research known as examination of the relationship between organizational culture and function of high school principals of Tehran public boys' schools, expressed that according to the teachers there was a significant relation between conflict and principals function with 99% certainty [16].

Zeinab Mandalizadeh and Habib Honari in a study titles as effecting factors on entrepreneurship in sport, mentioned lack of important matters such as sport management viewpoint to entrepreneurship in country, entrepreneurship guiding plan in sport and the quantity of training programs as entrepreneurship obstacles in sport inside Iran [17].

Mohammad Kazemi and et al. in a study titles as identification and analysis of organizational entrepreneurship behavioral obstacles in Iran Physical Education Organization, expressed that in IR Iran Physical Education Organization, organizational conflict not only is not a tool to achieve objectives, but it also considered as one of the organizational conflict entrepreneurship obstacle [18].

3. Research methodology

The present study is a practical research and data are collected with causal-comparison method. Data are the quantitative ones. The population includes all managers and coaches of student clubs in 22 regions of Tehran. Respecting to data collected 18 student clubs as well as 157 managers and coaches attended the study. Regarding Morgan table, 118 questionnaires were distributed randomly. Generally, the applicable questionnaires were 80 out of the total ones.

Putnam and Wilson organizational conflict standards questionnaire were applied which included 30 questions that identified the 5 conflict management styles in three strategies for obviating the conflicts.

- A) Non-confrontation Strategy: includes prevention, adaption or conciliation methods
- B) Solution-oriented Strategy: includes cooperation and reconciliation methods
- C) Control Strategy: includes control competitive method

Research tool is the manipulated and adapted form of Marguerite Hill organizational entrepreneurship questionnaires includes 60 questions in 6 dimensions of reward status, organizational flexibility, personal point of view, entrepreneurship culture, entrepreneur guide and organizational subjects. Each 10 questions are about one of the entrepreneurship components.

Cronbach Alpha coefficient is used for the validity of the questionnaires; Cronbach Alpha coefficient in Putnam and Wilson organizational conflict standards questionnaire was $\alpha=0.83$ and in Marguerite Hill organizational entrepreneurship questionnaires, $\alpha=0.85$.

Each demographic question was analyzed by descriptive statistics and then the data were analyzed with variance analysis test, structural equations test and in SPSS and LISREL. In order to determine the effect of organizational conflict, the following structural model with three strategies were applied.

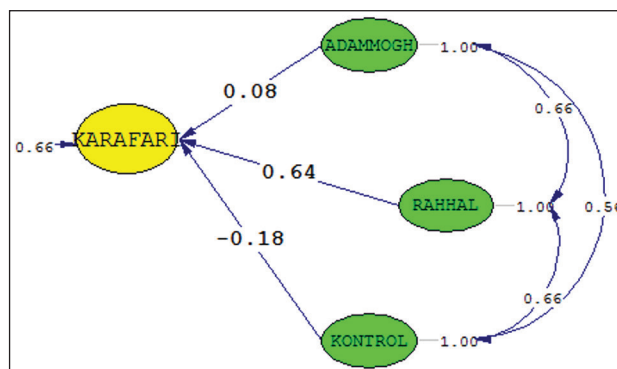


Figure 1. Research structural model in standard coefficient status

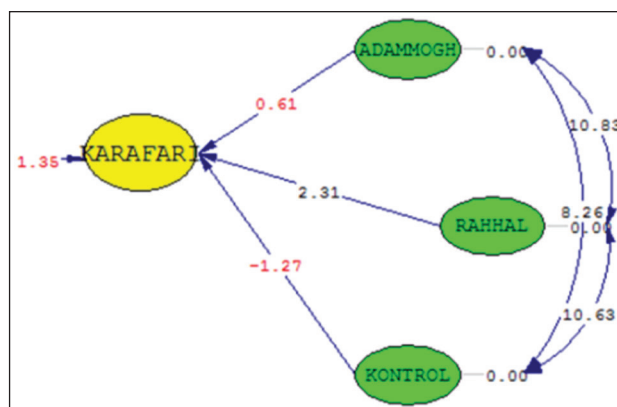


Figure 2. Research structural model in significant status (t-value)

3.1. Data analysis (findings)

61.2% of participants were male and 71.3 % were female. 27 people, equal to 63.8%, were single and 51 one, equal to 63.8%, were married.

The findings show that organizational entrepreneurship mean is 182.37 with standard deviation 23.38. The maximum entrepreneurship score is 209.

Regarding the total scores of organizational entrepreneurship aspects of Tehran students club, the highest mean is 32.11 for entrepreneurship guide and the lowest one is 30.33 for reward status.

The results of organizational conflict shows that organizational conflict mean in the examined sample is 119.89. (Maximum=151)

The highest mean in total organizational conflict management different aspects is for solution-oriented strategy and is 4.2 and the lowest one is for non-confrontation and is 3.7.

Table 1. Scoring people in connection with organizational entrepreneurship and its aspects

Variables	Quantity	Organizational entrepreneurship		Organizational Subjects		Personal Viewpoint		Organizational Flexibility		Reward Status		Entrepreneurship Guide		Entrepreneurship Culture	
Participants	80	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M
		23.38	182.37	4.45	31.35	3.3	30.95	4	31.05	4.56	30.33	3.36	32.11	3.21	31.18

Table 2. Scoring people according to organizational conflict scale and its aspects

Variables	Quantities	Organizational Conflict		Solution-oriented Strategy		Non-confrontation Strategy		Control Strategy	
Participants	80	SD	M	SD	M	SD	M	SD	M
		13.64	119.89	0.51	4.2	0.69	3.7	0.82	3.9

Table 3. Evaluation Indexes of the Research Model

Chi-square	Chi-square /FD	P-value	RMSEA	GFI	AGFI	CFI	NFI
1294.54	2.82	0	0.079	0.91	0.86	0.79	0.77

RMSEA is Root Mean Square Error of Approximation, AGFI is Adjusted Goodness of Fit Index, GFI is Goodness of Fit Index, CFI is Comparative of Fit Index and NFI is Normalized Fit Index.

3.2. Results of structural equations test

The model evaluation indexes are shown in Table 3. Chi-square is 1294.54 that is less than significant 0.05 at P-value. Chi-square/ freedom degree is 2.82. RMSEA is 0.079, GFI is 0.91, AGFI is 0.86, CFI is 0.79 and NFI is 0.77.

4. Discussion and conclusion

The results show that non-confrontation strategy has no significant effect on organizational entrepreneurship ($P > 0.05$). t score is less than 1.96, that demonstrates that there is a significant level larger than the supposed amount of 0.05. According to the achieved structural model, impact factor of non-confrontation strategy on organizational entrepreneurship is 0.08 that is not very significant. Therefore, based on this study, avoidance, adaptation or compromise which are the indexes or components of non-confrontation strategy, may not affect organizational entrepreneurship. The results of Hadadi and et al. show that this strategy is not acceptable for eliminating organizational conflicts and this fact verifies the findings of the present study [19]. Moreover, according to Karip, bureaucratic managers attempts to apply those strategies which preventing from conflicts, while based on the results of the present study, such method may not lead entrepreneurship increase. Contrary to the results of this research, Fayazi study illustrates that staff prefer to

use avoidance and compromise while the present paper shows the opposite results [20].

Regarding the findings we can conclude that solution-oriented strategy has significant effect on organizational entrepreneurship ($P < 0.05$). Standardized impact factor is 0.64 that shows significant impact of solution-oriented strategy on organizational entrepreneurship. Solution-oriented strategy has direct or positive impact on organizational entrepreneurship. Thus, this strategy that includes cooperation or compromise affects organizational entrepreneurship development.

Several studies support and verify the findings of the present one directly or indirectly, such as the results of Nekouei illustrate the impact of negotiation and solution-oriented style and lack of impact of other conflict management styles on staff creativity, that regarding the relation of creativity and entrepreneurship, they confirm the results of the present study. Moreover such results are consistent with Bahiraei study [16, 21]. Other papers like Machado show that conflict management results in motivation, aspiration, individual and organizational, problem solution and affectivity increase, which are consistent with entrepreneurship [22].

Consequently, the results of these researches are consistent with the present one.

Furthermore, the findings of Kuratko & Hodgetts and Hayton confirm the present study indirectly [9, 10].

Besides, control strategy dose not impact organizational entrepreneurship significantly ($P>0.05$). t score is less than 1.96 that shows there is a significant level more than the presupposed one 0.05. Plus, impact factor of control strategy is -0.18. Therefore, it may be said that control competitive method may not affect organizational entrepreneurship. The results of Nekouei show lack of impact of other methods except for solution-oriented on entrepreneurship [21]. Since there are few researches happened inside and outside Iran, the findings and result which may support the hypothesis of the present study are little.

Respecting the present study results, the only affecting conflict management method on entrepreneurship is solution-oriented one that includes cooperation and compromise. When people seek not all their desires and interests, they use compromise style; it means that satisfaction of just some needs is sufficient for them. In this method, flexibility, exchange and negotiation have special place. In cooperation method, the needs of both sides of conflict are satisfied. Choosing this method helps people to work together in such a way to all win the case. By applying such method, people seek for solution appropriate to their interests and keep their relationship in desirable and effective mood. The previous studies also support this hypothesis and show that although managers apply avoidance method in some cases, cooperation and compromise have the most impact on conflict decrease and entrepreneurship increase. However one cannot judge control and avoidance methods much because of few available supporting studies.

Regarding the results of the present study, the following suggestions for organizational entrepreneurship optimization in students' club of Tehran city are presented in order to identify the organizational conflict impact on organizational entrepreneurship of the mentioned organizations:

In case of organizational conflicts or any other problem or tension, prevent from avoiding and conciliation orientation, such orientations and solution in organization shall be founded out to be considered by pathology and being put aside.

Since regarding the inter-personal and inter-organizational interaction, organizational entrepreneurship is unavoidable, correct conflict management makes competition, creativity and innova-

tion. Therefore, educating correct method of conflict elimination by cooperation and compromise to managers seems vital.

Workshop, retraining courses and on-the-job training courses as well as conferences and seminars being held generally or specifically for managers and staff of students clubs in the field of training correct and fundamentals behavior with organizational conflicts seems necessary in order to have less damage to staff and their entrepreneurship and creativity.

Students' sport clubs are one of the important places where youth pass their leisure times, thus, it is important to be examined and evaluated in all aspects and the weak points and shortcomings shall be studies and eliminated.

References

1. Ahmadpour Dariani M. *Designing & Expressing Entrepreneur Managers' Education in Industry*. Thesis for MSc, Tarbiat Modares University, 1998.
2. Echols A, Neck Ch. *The Impact of behaviors and structure on corporate entrepreneurial success*, *Journal of managerial*, 1998.
3. Mantana P. *Learning Culture of Management*, 2006, Translator: Dr. SohrabKhalili, Tehran: Yadvareh Publication, 2007.
4. Asgarian M. *Education Organization and Management*, 11th Ed., Tehran: Amirkabir Publication, 2001; 11, 25, 87.
5. Robbins S. *Organizational behaviour*. Edition, prentice-Hall India, 2003; 396.
6. Moghimi SM, Pazouki A. *Encyclopedia of Entrepreneurship*, Tehran: Hampa Publication, 2008.
7. Jari S, Zanjani M. *Examination of Organizational Entrepreneurship in Iran*, *Tadbir Monthly Magazine*, 2001: 120.
8. Razavi SMH, Sedaghati S, Bolourian M. *Comprehensive Explanation of Process and structural status of students' sport clubs and its comparison with some selected countries*, *Harkat Publication*, 2008; No. 36: 193, 212.
9. Kuratko D, Hodgetts R. *Entrepreneurship: A contemporary approach*, New York: Harcourt college publisher; 2001.

10. Hayton J. *promoting corporate entrepreneurship through human resource management practices: Areview of emprical research*, *Human resource management review*, 2005; 15: 21-41.
11. Karlis G. *The future of leisure, Recreation, and sport in Canada: A swot for small sized enterprises*, *The sport journal*, 9, 2006; 2.
12. Billikopf G. *Conflict management skills*, university of California, 2009.
13. Chaudry A, et al. *Employees conflict management strategies and demography: Acase of Pakistan*, *African journal of business management*, 2011; Vol. 5.
14. Mirzaei Ahranjani H, Moghimi SM. *Presenting an organizational appropriate model for Iranian Private Organization with Entrepreneurship Approach*, *Management Knowledge Magazine*, 2003; 62: 101-138.
15. Moghimi SM. *Entrepreneurship in Civil Society*, Tehran: Tehran University Publication, 2004.
16. Bahiraei A. *Studying the relationship between organizational culture and operations of the principals of secondary education teachers of public boys' high school of Tehran at Viewpoint of the teachers*, Thesis for MSc, Shahid Beheshti University; 2009.
17. Mand Alizade Z, Honari H. *Effective Factors on Entrepreneurship in Sport as an Interdisciplinary area*, *Interdisciplinary Studies Quarterly in Humanities*, 2nd Turn, 2010; 2: 113-136.
18. Kazemi RM. et al. *Identification and Analysis of behavioral obstacles of Organizational Entrepreneurship in State Physical Education Organization*. *Publication of Kinesiology & Sport Management Researches*, 2011; 2: 89-100.
19. Fayyazi M. *Perceived conflict management styles*, Master's thesis, University of Allameh Tabatabai, 2010.
20. Haddadi N, et al. *The relationship between emotional intelligence and conflict management styles tolerance and avoidance of physical education teachers in West of Tehran*, *Sports Management Research and motor behavior*, 2011; 13: 54-4.1.
21. Nekoeimoghadam M. *Examines the relationship between styles of conflict management and creative staff teaching hospitals in Tehran*, *Quarterly Hospital*, 2008.
22. Machado F. *Managing conflict in general practice*, 2001, Available online at <http://www.abersychan.demon.co.uk>.

Corresponding Author
 Mohadeseh Fallahi,
 Islamic Azad University – Eslamshahr,
 Tehran,
 Iran,
 E-mail: fallahimohadeseh@gmail.com

Instructions for the authors

All papers need to be sent to email: ttem_bih@yahoo.com,

Every sent magazine gets its number, and author(s) will be notified if their paper is accepted and what is the number of paper. Every correspondence will use that number. The paper has to be typed on a standard size paper (format A4), leaving left margins to be at least 3 cm. All materials, including tables and references, have to be typed double-spaced, so one page has no more than 2000 alphanumerical characters (30 lines). Sent paper needs to be in the form of triplicate, considering that original one enclosure of the material can be photocopied. Presenting paper depends on its content, but usually it consists of a page title, summary, text references, legends for pictures and pictures. Type your paper in MS Word and send it on a diskette or a CD-ROM.

TITLE PAGE

Every article has to have a title page with a title of no more than 10 words: name (s), last and first of the author (s), name of the institution the authors (s) belongs to, abstract with maximum of 45 letters (including space), footnote with acknowledgments, name of the first author or another person with whom correspondence will be maintained.

ABSTRACT

Second page needs to contain paper summary, 200 words at the most. Summary needs to hold all essential facts of the work-purpose of work, used methods (with specific data, if possible) and basic facts. Summaries must have review of underlined data, ideas and conclusions from text. Summary has no quoted references. For key words, at the most, need to be placed below the text.

CENTRAL PART OF THE ARTICLE

Authentic papers contain these parts: introduction, goal, methods, results, discussion and conclusion. Introduction is brief and clear review of problem. Methods are shown so that interested a reader is able to repeat described research. Known methods don't need to be identified, it is cited (referenced). Results need to be shown clearly and logically, and their significance proven by statistical analysis. In discussion, results are interpreted and compared to existing, previously published findings in the same field. Conclusions have to give an answer to author's goal.

REFERENCES

Quoting references must be in a scale in which they are really used. Quoting most recent literature is recom-

mended. Only published articles (or articles accepted for publishing) can be used as references. Not-published observations and personal notifications need to be in text in brackets. Showing references is as how they appear in text. References cited in tables or pictures are also numbered according to quoting order. Citing paper with six or less authors must have cited names of all authors; if seven or more authors' wrote the paper, the name of the first three authors are cited with a note "et al". If the author is unknown, at the beginning of papers reference, the article is named as "unknown". Titles of the publications are abbreviated in accordance to Index Medicus, but if not listed in the index, whole title of the journal has to be written.

Footnote-comments, explanations, etc., cannot be used in the paper.

STATISTICAL ANALYSIS

Tests used for statistical analysis need to be shown in text and in tables or pictures containing statistical analysis.

TABLES AND PICTURES

Tables have to be numbered and shown by their order, so they can be understood without having to read the paper. Every column needs to have title, every measuring unit (SI) has to be clearly marked, preferably in footnotes below the table, in Arabian numbers or symbols. Pictures also have to be numbered as they appear in text. Drawings need to be enclosed on a white paper or tracing paper, while black and white photo have to be printed on a radiant paper. Legends next to pictures and photos have to be written on a separate A4 format paper. All illustrations (pictures, drawings, diagrams) have to be original and on their backs contain illustration number, first author last name, abbreviated title of the paper and picture top. It is appreciated if author marks the place for table or picture. Preferable the pictures format is TIF, quality 300 DPI.

USE OF ABBREVIATIONS

Use of abbreviations has to be reduced to minimum. Conventional units can be used without their definitions.