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Top Management Team Characteristics and Return on Assets: Case from the Russian Banking Sector

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Abstract

Background: According to the upper echelon theory top management team (TMT) characteristics influence on organizational outcomes of a company. Though this topic has been studied in different countries, it is not well researched in Russia, especially for some industries, including banking sector. The main purpose of the research is to study TMT in the Russian banking sector and its influence on return on assets (ROA), one of the metrics of bank's performance.
Methods: Data about top management team characteristics is collected for 178 banks (32% of banks, operated in Russia). The data includes age, gender, citizenship, education, functional expertise, and work experience of TMT. In addition, data for ROA calculation (net income and total assets) was taken from financial reports of banks. Regression analysis between TMT characteristics and ROA was conducted in SPSS software.
Results: The research found out the portrait of a top manager in Russia. Average age of TMT members equals 46.67 years with the youngest CEO of 29 and oldest CEO of 65 years. Russian banking sector is mostly a male environment (in 77.5% cases men take the CEO role), however, in majority of banks there is at least one woman. Majority of top managers is Russian citizens (only in 6.7% of banks CEOs are foreign nationals). And finally, all top managers have higher education and usually their degrees are in Economics, Engineering, and Law. Regression analysis demonstrated that three TMT characteristics influence ROA: percentage of TMT members with scientific degree (with positive effect), gender heterogeneity and CEO duality (with negative effect).
Conclusions: For reaching higher ROA, Board of Directors (BoD) of banks in Russia should appoint more top managers with scientific degree and avoid CEO duality and high gender heterogeneity in TMT.

Keywords: top management team, return on assets, banking sector, Russia.

1. Introduction

Top managers are studied by many scholars and considered from different perspectives. Researchers investigate individual characteristics, perceptions, and values of top managers in psychology. Behavioral and social scientists study TMT as a group. Scholars from management and economic field pay attention to TMT leadership skills, competencies, team diversity and its influence on a company (expenses, innovation, organizational climate, corporate

values, financial performance, etc.). In 1980s studies related to TMT were combined in the upper echelons theory, which concentrated on research of basic demographic characteristics, such as age, gender, race, and nationality (Hambrick & Mason, 1984). Following the development of organizational demography theory, scholars began to study more demographic TMT characteristics, including tenure within the company, previous experience and qualifications. Later heterogeneity (or TMT diversity) became one of the main topics in upper echelons theory.

Nowadays, scholars consider not only TMT characteristics and diversity, but also its influence on organizational outcomes, including finical indicators. This topic is well researched in the USA and Europe. In Russia few researchers considered this topic, but none of them analyzed correlation between TMT characteristics and financial performance of banks. Therefore, the current research is devoted to study TMT characteristics of banks in Russia and investigate if it effect return on assets.

2. Literature review

2.1 *Russian banking sector and top managers of banks*

Per Central Bank of Russia (CBR), there are 538 credit institutions licensed to conduct banking operations on the Russian market in 2018. Although the number of credit institutions has been decreasing for the last several years, there are still as many banks in Russia as in the USA, Germany, Austria, and France respectively. Concentration of capital in the Russian banking sector is high.

It is also interesting that Russia is one of the countries with hundreds of banks, but a low real level of competition as in Macedonia, Slovakia, Oman, and Greece. The main reason of the low level of competition is the power of state-controlled banks in Russia, which directly or indirectly controlled by the Bank of Russia or the Russian Federation. Though the number of state-controlled banks is low (only 5% of the total number of banks), they own more than a half of total assets of the Russian banking sector (Banking Supervision Report, 2018). Per the Center of Economic Research of the Moscow Financial and Industrial Academy, there are only three big national economies, where state-controlled banks continue to play the main role in the banking sector: China, India, and Russia. Most credit institutions in Russia are local, and only 27% of them are foreign. In other developing countries, this indicator is higher, for example in East Europe around 70% of banks are controlled by foreign capital, in Latin America – 40%.

Currently, the structure of the Russian banking sector's total assets is the following: state-controlled banks (58.6% of the banking sector's total assets), large private banks (29.8%), foreign-controlled banks (8.8%), and small and medium-sized banks based in the Moscow Region as well as in other regions (2.8%).

In the banking sector in Russia the day-to-day operation of banks is managed by members of the executive board. Executive board members are main decision-makers in bank's operations in Russia and therefore in the current research TMT of Russian banks is considered as a team of executive board members. Executive directors of banks in Russia are employed full-time and are responsible for their area of day-to-day functional or operational business. They attend the executive board meetings and report directly to CEO. Executive directors in banks in Russia set the direction, mission and policies for the business.

As the purpose of the current research is to analyses the influence of TMT characteristics on ROA of banks in the Russian banking sector, it is necessary to determine what TMT characteristics to consider.

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2.2 *TMT characteristics*

Upper echelons theory appeared in 1980s (Hambrick & Mason, 1984) and since then many studies began to investigate TMT characteristics and its influence on firm performance in different countries. For the research purpose all publications devoted to the TMT characteristics were found in the Elsevier's Scopus database. The search words included "top management", "TMT", "team", "CEO", "Chief Executive Officer", "CFO", "Chief Financial Officer", and "characteristics". 262 articles were selected for the abstract analysis, and finally it appeared that only 98 publications (71 articles, 20 conference proceedings, 4 book chapters, and 3 reviews) are relevant to the topic.

Literature review shows that most publications are prepared by the USA, European, and Chinese researchers. No research on the TMT characteristics was found out in Russia. Details on publications by geographic regions are presented in the below table.

Table 1. Number of publications devoted to the TMT characteristics by country

Region	Total Number of Publications	Number of Publications by Country
North America	40	36-USA, 4-Canada
Asia	39	21-China, 4-Taiwan, 4-Tunisia, 2-Malasiya, 2-Singapore, 2-South Korea, 1-Hong Kong, 1-Qatar, 1-Thailand, 1-Yemen
Europe	31	5-UK, 4-Germay, 4-Italy, 4-Spain, 3-Belgium, 3-Norway, 2-France, 1-Finland, 1-Nethelands, 1-Portugal, 1-Poland, 1-Romania, 1-Turkey
Oceania	7	5-Australia, 2-New Zealand

Source: Developed by the authors

The first researchers of the executive teams considered basic demographic characteristics, such as age, gender, race, and nationality (Barnard, 1938). Following the development of organizational demography theory (Pfeffer, 1983) scholars began to study more demographic characteristics, including tenure within the company, previous experience and qualifications (Korac-Kakabadse et al., 2001). Functional tracks and other career experiences of each TMT are also important characteristics (Hambrick & Mason, 1984). Rresearchers analyse functional background (Yoon et al., 2016; Díaz-Fernández et al., 2014), international experience (Bany-Ariffin et al., 2014; Herrmann & Datta, 2005), executive experience (Bjornal et al., 2016; Yang et al., 2011) or industry experience (Ahrens et al., 2015; Knockaert, 2015).
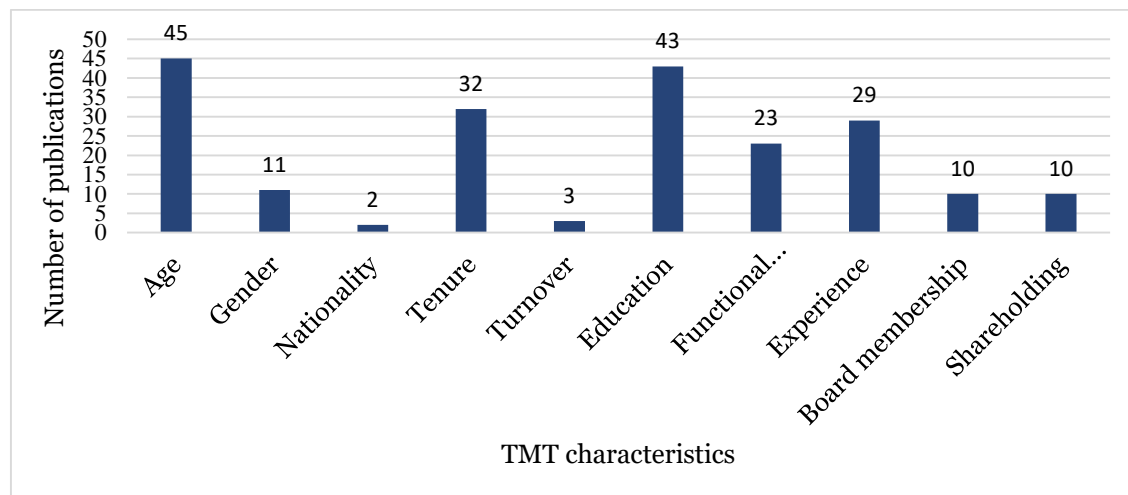

Figure 1. Results of frequency analysis of the TMT demographic characteristics

For the deeper understanding of what the TMT characteristics are considered more often, all 98 selected publications were analyzed and frequency analysis of appearance of each TMT characteristic was conducted. Results of the analysis are presented in the previous figure.

The latest publications are usually devoted not to TMT characteristics itself, but to TMT heterogeneity (or diversity). It can be determined as the differences in TMT members with respect to their demographics (Oduor & Kilika, 2018), for example, diversity in TMT tenure (Jaw, Lin, 2009). Other researchers consider educational diversity (Yoon et al., 2016; Zahra & Wiklund, 2010), functional diversity (Bjornali at al.; 2011; Buyl et al., 2011), and gender diversity (Wen et al., 2015; Yang & Wang, 2014).

2.3 ROA and TMT characteristics

There are many approaches of estimating firm performance depending on the level of analysis, including human, operational, and financial levels (Ketkar & Sett, 2009). Financial outcomes are considered more frequently than operational or human, because usually financial indicators are objective and data for its calculation is publicly available in the financial reports of companies. Therefore, in this study only financial performance is taken into consideration.

In the upper echelon research devoted to the analysis of TMT characteristics' influence on organizational outcomes, authors consider both market-based and accounting measures to assess financial performance. Return on assets is the most frequently used indicator among accounting-based measures. It was taken as a main performance indicator in several TMT studies (Díaz-Fernández et al., 2014; Marcel, 2009; Goll et al., 2008; Ben Cheikh & Zarai, 2008, etc.). These studies generate diverse results by founding out positive, negative or no relationship between the TMT characteristics and ROA. Details of the empirical findings are presented in the below table.

Table 2. Research examples of relationship between TMT characteristics and ROA

Correlation	Authors	Industry/ Sector	TMT Characteristics
No	Díaz-Fernández et al., 2014	Spanish large companies	TMT functional diversity
Negative	Peni, 2014	Firms from a variety of industries	CEO holding multiple board seats
	Díaz-Fernández et al., 2014	Spanish large companies	TMT's education-level diversity
	Marcel, 2009	153 firms in five industries	CEO/COO duality
	Goll et al., 2008	Major US airlines	TMT age (during the deregulatory period)
Positive	Peni, 2014	Firms from a variety of industries	- Presence of female CEO - CEO duality - CEO experience
	Li & Zhang, 2014	Chinese listed firms	- CEO age - CEO education level - CEO generated internally
	Buyl et al., 2011	Dutch and Belgian IT firms	TMT functional diversity
	Goll et al., 2008	Major US airlines	- TMT education level (under regulation) - TMT tenure and functional diversity (during the deregulatory period)
	Ben Cheikh & Zarai, 2008	Tunisian companies	CEO power

Source: Developed by the authors

The above data demonstrates that for different industries and different countries results are diverse. For example, TMT functional diversity has no influence on ROA in Spanish large companies but has positive effect in Dutch and Belgian IT firms as well as in major US airlines during the deregulatory period. This means that local and industry specifics can determine what TMT characteristics has influence on ROA in various cases. As there is no evidence from Russia, the current research investigates if TMT characteristics influence ROA of banks on the Russian market. Methodology of the research is described in the next section.

3. Research design and methodology

3.1 *Research design*

This research adopts mixed research techniques and quantitative approach to data sources and analysis. Such approach helps to provide insightful and objective knowledge for the study and answer the below research questions:

1. What are the main TMT characteristics in the Russian banking sector?

2. Is there a correlation between TMT characteristics and ROA?

3. What TMT characteristics have positive and negative effect on ROA?

Literature review found out the most frequently used TMT characteristics, which are used for analysis of TMT diversity. All of them are investigated in the research, including diversity of TMT demographic characteristics, work experience, and education. The research investigates the linkage between TMT characteristics and ROA. The below theoretical model addresses the main purpose of the research (Figure 2).
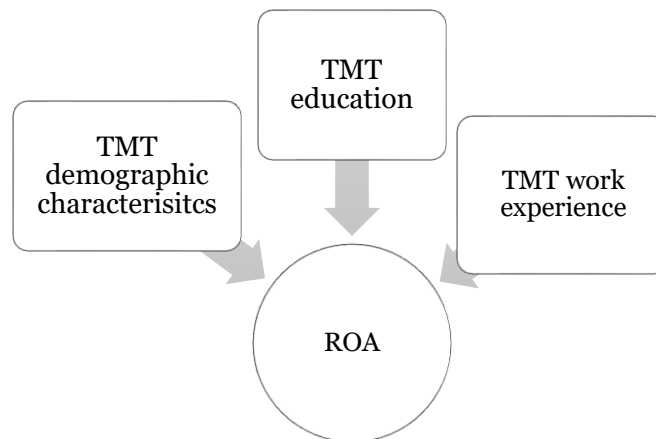
Figure 2. Theoretical Model of the Research

Source: Developed by the authors

3.2 *Data collection*

The research includes different types of secondary data. Firstly, data about TMT members was collected from websites of banks. Data about demographic characteristics, work experience, and education is available. According to the Russian legislation banks must publish these data for top managers. Websites for 178 banks were studied and data about TMT was summarized in Excel for further coding. For majority of banks this data was published in Russian,

therefore it then further has been translated in English for the coding purposes. Summary of data collected about TMT characteristics' is presented in the Table 3.

Table 3. Data collected about TMT members' characteristics

Type of Data	Variables	Source of Data
Demographic characteristics	• Name • Gender • Age • Nationality	Websites of banks (usually in the "Corporate Governance" section)
Work Experience	• Position • Core function • Job history • International experience	
Education	• University • Major • Additional education • Scientific degree • Field	

Source: Developed by the authors

Secondly, data about net income and total assets was collected from financial statement of each bank. This data is necessary for ROA calculation, which is calculated based on the following formula:

$$ROA = \frac{Net\ Income}{Total\ assets}$$

Return on assets gives an idea as to how efficient management is at using its assets to generate earnings. It helps to identify how profitable a company is relative to its total assets (Pena & Villasarelo, 2010).

3.3 *Sample*

The size of the banks in this survey is mostly average. 50.6% of the sample have less than 500 employees. Only 3.4% have more than 10000 employees. According to the EU definition from the Centre of Strategy and Evaluation Services[1], an institution that has below 250 employees, is defined as a small and medium enterprises. In this study, 51 banks (28.7% of the sample) are therefore small and medium sized organizations. The majority are big banks.

The review of the banking sector in Russia has shown that most banks are private, and only few are government controlled. In this survey 15.2% are government-controlled banks and 84.8% of the sample are private banks. Most banks are local (74.7%), only 25.3% are international banks. More than 80% of banks in the sample are universal, which means that they provide different type of financial services for both private and corporate clients. Three other categories are represented by 5-6% of banks. This represents well the whole Russian banking sector, where there is a small number of corporate, retail or investment banks.

The concentration of capital refers to the shareholder structure of a bank. If there is one shareholder, who controls key decision-making processes then the concentration of capital is high. If there are many minority shareholders, then that concentration is low. More than sixty

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[5] Centre of Strategy and Evaluation Services: http://www.cses.co.uk/.

percent of banks have a high concentration of capital and 28.7% have a low capital concentration. The rest of the banks have several shareholders, who control main management decisions.

3.4 *Data analysis*

The current research is quantitative and statistical analysis was applied for analysis of the coded data. For some variables coding was not required (name of TMT member, age), but other variables were coded for further analysis in SPSS. To evaluate TMT heterogeneity, coefficient of variance (CV) was calculated. Formula of CV is outlined below.

$CV = (SD/ \mu) *100$, where SD – standard deviation, μ – mean.

$SD = \frac{\sum_{i=1}^{N}|x_i-\mu|^2}{N}$, N- number of values.

- <17% – very homogeneous;
- 17–33%% – homogeneous;
- 35–40%% – slightly homogeneous;
- 40–60%% – slightly heterogeneous;
- > 60% - heterogeneous.

Finally, regression analysis was applied to investigate if TMT characteristics and TMT heterogeneity influence ROA of banks in Russia.

4. Research findings

Variance coefficient was calculated for all TMT characteristics of each bank. The research found out minimum, maximum, average, and standard deviation of variance coefficient for all top management team characteristics. The results are presented in the Table 4.

Table 4. Variance coefficient for TMT characteristics

TMT Characteristics	Minimum	Maximum	Average	Standard Deviation
Gender	0	0.47	0.3193	0.12531
Citizenship	0	0.99	0.0843	0.21111
Number of years of work experience	0	0.76	0.0124	0.05687
Education	0	1.22	0.7051	0.25557
Current functional expertise	0	1.11	0.6113	0.25746
Work experience in the banking sector	0	0.43	0.2198	0.18367
Functional work experience	0	1.15	0.6392	0.21162
International work experience	0	0.43	0.0435	0.11173
Membership in the Board of Directors	0	0.64	0.2103	0.21433

Source: Developed by the authors

The calculated meanings of average, maximum, and standard deviation for variance coefficient for different top management characteristics show that TMT in the Russian banking sector are heterogeneous in terms of their current functional expertise, functional work experience, and education background. This finding can be simply explained by the fact that top management teams in banks usually consist of heads of functional departments, who should have

education background and work experience related to their function. If we consider other top management characteristics, TMT are homogeneous. In average, top management team in Russia consist majority of Russian men with the same duration of their membership in the executive board and usually with the work experience in the Russian banking sector without international working background.

Regression analysis was conducted to study the influence of TMT characteristics on ROA. Three models created in SPSS with stepwise regression are presented below.

Table 5. Regression models summary (ROA)

Model	R	R-squared	Adjusted R-squared	Std. Error of the Estimate	Change statistics					Durbin–Watson statistic
					R squire change	F change	df1	df2	Sig. F change	
1	.188[a]	.035	.030	.09636	.035	6.413	1	176	.012	
2	.263[b]	.069	.059	.09492	.034	6.394	1	175	.012	
3	.303[c]	.092	.076	.09404	.022	4.283	1	174	.040	2.017

(a) Predictors: (Constant) Gender heterogeneity

(b) Predictors: (Constant) Gender heterogeneity, percentage of TMT members with scientific degree

(c) Predictors: (Constant) Gender heterogeneity, percentage of TMT members with scientific degree, CEO duality

Source: Developed by the authors

The analysis shows that the third model has the highest value of R-squared (0.092) and adjusted R-squared (0.076). This means that this model is more suitable for explanation of how TMT characteristics determine ROA. According to this model only three indicators influence ROA: gender heterogeneity, percentage of TMT members with scientific degree, and membership of CEO in BoD. Regression coefficients are outlined in the below table.

Table 6. Regression coefficients for TMT characteristics (ROA)

Model (3)	Unstandardized coefficients		Standardized coefficients	t	P>t	[95% Conf. Interval]	
	B	Std. Err.	Beta			Lower Bound	Upper Bound
(Constant)	.092	.027		3.360	.001	.038	.146
Gender heterogeneity	-.160	.057	-.205	-2.82	.005	-.272	-.048
% of TMT members with scientific degree	.002	.001	.215	2.919	.004	.001	.003
CEO duality	-.023	.011	-.154	-2.07	.040	-.045	-.001

Source: Developed by the authors

According to the above table gender heterogeneity negatively effects bank's ROA on the Russian market (standardized coefficient is minus 0,205). This result shows that in banks with homogenous TMT in terms of gender ROA is higher. As only in 6 banks from the sample (3.4%) all top managers are women, homogenous TMT mainly refers to the male TMT. This research finding contradicts with other international researches, which state that business organizations

achieve higher financial performance results in case of higher gender heterogeneity (Wen et al., 2015; Yang & Wang, 2014).

Percentage of TMT members with scientific degree positively effects ROA (standardized coefficient is 0.215), which means that TMTs with higher number of PhD holders reach higher ROA. This is not necessarily connected with PhD itself, but with personal qualities of PhD holders. These individuals are usually goal-oriented, have good critical thinking and analytical skills, which are important in managing a bank.

Another interesting observation is that CEO duality negatively influences ROA of a bank in Russia (standardized coefficient is minus 0.154). This negative effect can be explained by several things. Firstly, CEO duality may create conflicts of interest. Secondly, BoD can heavily rely on CEO's opinion, and therefore CEO has too much influence on the board decisions. Thirdly, CEO membership in BoD can limit opportunities of adequate supervision and evaluation of bank's management.

The described line regression model does not include organizational characteristics of banks. As ROA can vary for different types of banks, it is important to take them into consideration. Line regression model has been updated after inclusion of all organizational characteristics of banks (considered in the research). Four models were created with stepwise regression, and the fourth one has the highest value of R-squared (0.113) and adjusted R-squared (0.093). Regression coefficients are outlined in the below table.

Table 7. Regression coefficients for TMT and organizational characteristics (ROA)

Model (4)	Unstandardized coefficients		Standardized coefficients	t	P>t	[95% Conf. Interval]	
	B	Std. Err.	Beta			Lower Bound	Upper Bound
(Constant)	.162	.044		3.722	.000	.076	.248
Gender heterogeneity	-.152	.056	-.194	-2.68	.008	-.263	-.040
% of TMT members with scientific degree	.002	.001	.207	2.829	.005	.001	.003
Type of Ownership	-.040	.020	-.148	-2.06	.041	-.079	-.002
CEO duality	-.022	.011	-.146	-1.98	.049	-.044	.000

Source: Developed by the authors

Inclusion of organizational characteristics in the regression model showed that type of ownership influences ROA in addition to three identified TMT characteristics. Regression coefficient equals minus 0.148. Type of ownership is a binominal distribution in the current research, where 1 refers to a private bank, and 2 – to a state-owned bank. This means that for private banks ROA is higher than for state-owned banks on the Russian market despite the differences in TMT characteristics.

5. Conclusions

Top management team in the Russian banking sector is mostly homogeneous. TMTs are homogeneous in terms of their age, gender, nationality, and previous industry work experience. Top managers in banks are usually Russian men at the age of 40-50 years with previous work experience only in the banking sector. TMTs have diverse educational background (Economics, Math's, Physics, Law or another field) and functional expertise (general management, finance, sales, human resource management, etc.).

The research also found out that in Russia CEO duality and gender heterogeneity have a negative effect on ROA, while higher percentage of top managers with scientific degree is associated with positive effect on ROA. Other TMT characteristics have no impact. This means that for reaching higher ROA, Board of Directors of banks in Russia should appoint more top managers with scientific degree and avoid CEO duality and high gender heterogeneity in TMT.

In considering the conclusions of the study, limitations have been identified concerning the research only in the banking sector of Russia, as it might not be fully representative. This limitation has affected the results of the study, as a broader sample could have brought further expertise. Even though this limitation may apply, the paper is still valid. The study can be used to justify further studies as well as a way of adding to existing knowledge.

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Financing Higher Secondary Education:
A Pilot Study on Households Expenditure Pattern

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Abstract

This article deals with the issue of financing higher secondary education (grade 11 and 12) in Nepal. The higher secondary education is growing in each passing year with the involvement of public as well as private schools. The main concern is to explore an appropriate mechanism of determining fees and pricing that are beneficial to both students as well as higher education board. In absence of standard parameters of fees structure and investment, it is difficult to estimate resources accurately. It is also difficult to find the total investment made and pattern of financing by government, households and other donor agencies including I/NGOs. In the absence of adequate documentation, it becomes difficult to make evidence-based plans and policies. So, there is a need of research that gives an overview of financing patterns in the present context for further expansion and modification of the financing pattern in this sector.

Keywords: Higher secondary education, education financing, household financing, school expenditure.

1. Introduction

Education is considered a key intervention to generate full employment and economic prosperity. With globalization and development in information technology, demand for education is at its peak, not only for individual freedom but also as an investment for collective benefit of society. Economies are gradually becoming more knowledge intensive. With increase in investments it is necessary to understand nature of human capital and the role it is going to play in country's wellbeing and more specifically how the required human capital is going to be supplied. Understanding human capital requires a broader sense of analysis. Rather than limiting the outcomes of human capital to social and individual returns the role of human capital in generating knowledge, skill, competencies, attitude in a person has to be understood in relation to how these traits facilitates.

Education not only benefits the individual involved in it but also generates spillovers for the society. Through access and completion of education human capital is developed leading to a more engaged and cohesive participatory society. Thus, education is considered as a key intervention to generate full employment and economic prosperity. With globalization and development in information technology, demand for education is at its peak, not only for individual freedom but also as an investment for collective benefit of society. With increase in investments it is necessary to understand nature of human capital and the role it is going to play in country's wellbeing and more specifically how the required human capital is going to be

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supplied. Understanding human capital requires a broader sense of analysis. Rather than limiting the outcomes of human capital to social and individual returns the role of human capital in generating knowledge, skill, competencies, attitude in a person has to be understood in relation to how these traits facilitates in creation of personal, social and economic wellbeing (UNESCO, 2003).

Education financing is the most important aspect of human capital supply. It is an elaborate process of allocating resource for education. The process is very complex and controversial. Which sector to prioritize? How to generate resources for financing education? What human resources are needed for a country? How much to invest in education? Which region to invest (rural or urban)? Which sector will invest in education? What are the roles of students and household sector? What are the roles of public, private and international agencies? How to monitor the outcomes of investments? Many such questions have to be considered while financing education (Vegas, 2011). Understanding the world trend in education financing is therefore necessary to know Nepal's position on education financing. In this regards the paper first outlines world trend in education financing focusing on public expenditure on education going on to discuss education financing in Nepal. Therefore, the objective of the study is to carry out the assessment on the financing status of higher secondary education (grade 11 and 12) on the investment made by the households in Nepal.

2. Research methods and approaches

The research design for *this study* is mixed in nature. The qualitative data are collected via in depth interview and focus group discussion (FGD) and that followed the quantitative figures and their interpretation. The structured questionnaires are designed to quantify data to produce meaningful result and elucidation of the research. The data, facts, figures and information associated with the financing of higher secondary is produced by different key sources related to the area. The collected facts and figures were used to present the financing flow of higher secondary school, households (HHs) financing for grade 11 and 12 and financing pattern of government. Data is collected through primary and secondary sources. The primary source of data collection consisted survey. The selected districts were three from Kathmandu Valley, one form hilly region (Kaski), two from mountain region (Dolkha and Rasuwa) and one from terai region (Banke). Sample of the study were 20 – 20 students in private and public schools from all selected districts.

SPSS software package was used for the data entry, verification, editing and tabulation of the study results. These data were then present in the format of chart and tables for facts in report. The quantitative data were presented in tables, charts and graphs as and when it was considered necessary and useful In the case of qualitative data, the collected data were transcribed and well organized into different themes and sub-themes. Then data were groups coded and grouped thematically as per the research questions. The themes were further sub-categorized according to the objectives of the research in different areas and sub-areas for meaning making process. These processes were substantiated by already established and published information related to the study. Finally, report was prepared by analyzing both the quantitative and qualitative data and findings were drawn. The reflections of ideas were also drawn from the review. The final report and dissemination of the findings were presented on the basis of the mutual understanding of the consultant and client.

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3. Literature review

An overview of world trend in education reveals that governments support on primary education is high as unit costs are low, has more social returns and is observed to favor poor. While at tertiary level government support is less as unit costs are comparatively higher, individual returns are higher compared to social returns and participants are from higher income households (World Bank, 2001). For countries that have already achieved primary education targets investments are greater in secondary education, in North American, Europe and Central Asia public expenditure is higher in secondary education compared to primary education. While in East Asia and Pacific, South and West Asia, Latin America and the Caribbean and Sub-Saharan Africa public expenditure is high in primary education. Public expenditure on tertiary education is low compared to primary and secondary education in all regions of the world (Voffal, 2012).

Various researches have shown that relation between expenditure in education and learning outcomes is bleak (Al-Samarrai, 2003). This indicates that focus should be given in what way are the expenditure done rather than how much is allocated. The core areas on education finance systems that have to be taken into consideration are school conditions and resources, allocation mechanisms, revenue sources, education spending and fiscal control and capacity. Likewise, key policy goals are ensuring adequacy, performing efficiently and promoting equity (Vegas & Coffin, 2012).

Mechanisms such as direct public funding of private schools, scholarships and student loans are widely used, other mechanisms such as community grant (grant given to group of individuals linking to attendance in a community based institution), targeted bursaries (purpose specific, earmarked transfers targeted to schools, municipalities or provinces), voucher (payment given directly to students to be used at school of their own choice) and social funds (are financial proposals for acquiring public, private or community support for education) are also coming up. Each of these mechanisms have their own objectives and constraints (Patrinos & Ariasingam, 1997, cited in UNESCO, 2002). Promoting equity is the major objective of all the mechanisms. Community grants and social funds aim at improving management capacities besides promoting equity. Target bursaries aim to enhance access and vouchers aspire to increase choice in education. Concerns are mostly on sustainability of the project, credibility of schools and social divisions that could be caused by these mechanisms.

Around the world more than three fourth of expenses on education is incurred on staff compensation. It was observed that about 83 and 80.3% of education expenses go to staff compensation in WEI and OECD countries respectively. Capital expenditure comprises 8% of total education expenses while rest is recurrent expenditure. In WEI countries share of capital expenditure is slightly greater at 8.6% compared to OECD countries (7.9%). WEI countries have greater share of education as portion of total public expenditure compared to OECD countries. However greater portion of GDP of OECD countries is invested in education compared to WEI countries.

School education is the most prioritized sector of education financing in Nepal. At present around, 61.3% of total education expenditure is on schools. Education Act 2028 (1971) (eighth amendment, 2006) has made various provision for school level funding. District Education Fund consists of grants from Government of Nepal, grants from District Development Committee, amount collected from education tax, donations and funds from other sources. At local level schools are funded by the school Fund which consists of grants from Government of Nepal, grants from District Education Fund, grants from VDC or municipality, fees, donations, funds from other sources. The sixth amendment of this act has made provision for Rural Education.

Development Fund which consists of funds from Government of Nepal, funds (not less than 1.5% of total annual revenue) from institutional schools, donations, funds from other sources.

The Constitution of Nepal (2015) demands a thorough reorientation of the education system through structural and functional reforms including the policy and regulatory frameworks. The constitution guarantees the fundamental right to education and lays down the directive principles of the federal state, provinces1 and local bodies on education and the right to education. To address the fundamental rights, the SSRP and previous programs had stressed improving overall access to education, as well as quality and learning outcomes. As such, the SSDP is taking the quality agenda forward through an increased focus on the quality of education and equitable access, participation and learning outcomes. It also mentions that local governments and school communities are playing major role in financial management.

Around 1.48% of total education expenditure has been allocated for higher secondary education. Higher secondary education is mostly funded by household sector. Higher Secondary Education Act 2046 (1989) has made provision for Higher Secondary Education Council. The Council can secure loans and grants or collect financial resources for operation with prior approval from Nepal Government. The Council should have a separate fund which consists of grants from Nepal Government, amounts from donations; amount from other sources.

4. Finding and analysis

This chapter gives the comparison of Higher Secondary Schools inside and outside the Valley considered for the study. Institutional as well as public school have been considered for the research. Comparison is based on location (inside or outside Kathmandu Valley), period (fiscal year 2067/68, 2068/69 and 2069/70) and streams (science, management and others). Primary data was collected from school of Kathmandu, Lalitpur and Bhaktapur District that have been grouped as school inside Kathmandu Valley. Higher Secondary School from Kaski, Rasuwa, Banke and Dolakha has been grouped as school outside Kathmandu Valley.

Information on revenue and expenditure of school were collected and information on household income and living expenditure was collected for understanding household level financing on higher secondary education. Apart from that various case studies from school operators as well as parents have been collected to understand their perception on financing higher secondary education.

Students that participated in the research were studying in grade 11, grade 12 and had already passed grade 12. Out of total school 42.86% were from Kathmandu Valley and 57.14% were from outside Kathmandu Valley. Of total students' 50% were from inside the Valley and 50% were form outside the Valley. Among them 18.5% were from private school inside the Valley, 31.5% were from public school from inside the Valley, 23.56% were from private school outside the Valley and 21.44% were from public school outside the Valley. The portion of public-school students is more compared to private school students.

5. Revenue of schools

It is observed that revenue generated by school inside as well as outside the Valley are increasing. However, it is observed that revenue is increasing more for private school. For public school considered in the research it is observed that the annual revenue is almost constant. The average revenue of private school was about Rs. 9.3 million in fiscal year 2067/68 which decreased to Rs. 9.1 million in 2068/69 and increased to Rs. 10.9 million in 2069/70. For public school revenue was observed to increase from Rs. 0.75 million in 2067/68 to Rs. 0.86 million in 2068/69 and remained constant at Rs. 0.86 million in 2069/70. It is observed that the average annual revenue generated by private school is more than ten times revenue generated by public school.

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This indicates that large investment has been done in private school. Although public school fulfills demand of larger portion of population, the fees are nominal compared to private school. This has been the problem for almost all the public school participating in the research. Government support is not adequate to run public school and support form education board is fairly nominal. The following section gives the average annual income generated from various sources for private and public school.

The sources of revenue are different for private and public school. It is observed that private school earn on average Rs. 6.3 million from monthly fee annually while public Schools earn about Rs. 0.43 million from monthly fees. While Rs. 1.82 million is contributed by shareholders in private schools, Rs. 0.24 million is contributed by community in public school. Private school earn on an average Rs. 0.66 million from annual charges (transportation, computer lab, library, sports), this amount is minimal (Rs. 0.02 million) in public school. Private school earn around Rs. 0.33 million from internal examination fee compared to only Rs. 0.01 million by public school. Around Rs. 0.21 million is earned from interests in private school while the amount is Rs. 0.02 million in public school. Average income from rent is higher in public school (Rs. 0.15 million) compared to private school (Rs. 0.01 million). Around Rs. 0.21 million is generated by private school from products and services while public school does not earn from products and services. Around Rs. 0.7 million is received by public school as government support. Public school was observed to earn from other sources such as religious activities which accounted to Rs. 0.62 million while it was just Rs. 0.01 for private school.

Table 1. Annual average revenue generated from different sources

Sources of revenue	Private	Public
school Fees	6,397,644.23	431,617.51
Shareholders/ community	1,823,556.16	248,891.89
Other Fees (Transportation, computer lab, library, sports)	664,691.52	20,693.87
Internal Exam Fee	338,252.86	13,986.94
Interest earned	212,274.27	20,412.78
Rental income from school property	18,486.67	159,134.53
Product/Service	217,169.95	-
Government sources	-	72,650.05
Others	19,288.00	692,936.00

It has to be considered that sources such as religious activities are not common to all public school however it has contributed a large portion in revenues of public school that were considered for the study. Revenue sources may vary according to location. As fees are lower in public school, they have to look for other sources of revenue. In private monthly fee the major contributor while other sources are fewer contributors. Private school has investors who bear the initial investment cost of overheads. For public school the initial overhead expenses are borne by local community sources and government sources. Public school have come up with strategies such as renting the school property and religious activities to cope up with extreme shortage of funds. On one hand public schools are the panacea for thousands of low income families who cannot afford private schools. On the other hand, they also have to pay regular salaries to staffs and maintain school infrastructures.

Table 2. Average annual revenue across period, type and location

Period	Type	Location	Average annual revenue (Rs.)
2067/68	Private	Inside Kathmandu Valley	9,863,677.20
		Outside Kathmandu Valley	9,029,322.22
		Total	9,307,440.54
	Public	Inside Kathmandu Valley	883,430.40
		Outside Kathmandu Valley	629,070.70
		Total	756,250.55
2068/69	Private	Inside Kathmandu Valley	10,763,594.40
		Outside Kathmandu Valley	8,407,365.17
		Total	9,192,774.91
	Public	Inside Kathmandu Valley	890,734.50
		Outside Kathmandu Valley	830,920.50
		Total	860,827.50
2069/70	Private	Inside Kathmandu Valley	11,554,446.40
		Outside Kathmandu Valley	10,629,709.49
		Total	10,937,955.13
	Public	Inside Kathmandu Valley	709,202.20
		Outside Kathmandu Valley	1,017,080.00
		Total	863,141.10

Private school has larger investment hence the school management as well as shareholders ensures that the institution is running efficiently. There are strict code of conduct for management staffs and teachers. Teachers have to complete their courses on time and are paid according to their experience and expertise. The credibility of the institution lies on students' performance hence regular class tests and terminal examinations are taken. It is ensured that students are well disciplined and are studying. There are also regular contacts of the teachers with parents. Hence parents are aware of their children's performance.

Public schools on the other hand suffer from shortage of funds. The monthly fees and government support is inadequate to meet regular operation costs. There is large number of students in a class in government school (more then 40). Teachers cannot give attention to student's performance; teachers cannot correct individual assignments and give feedback. Students mostly depend on guidebooks and guess papers to pass exams. In many government school sessions started late because most of the students come after the SLC make-up exams. The main aim of the teachers is to complete the course on time. Teachers are concerned about students' performance but they have limited resource.

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6. Expenditure in different schools

Every year school makes expenditure based on their annual revenue and support from shareholders or community. Expenditure is mostly on operation and maintenance. In the school considered for the study expenditure was observed to be directly proportional to revenue generated. Like revenue, expenditure in private school is almost ten times that of public school. Expenditure in private school has been increasing annually. The average expenditure for private school was about Rs. 6.83 million in fiscal year 2067/68 which increased to Rs. 6.86 million in 2068/69 and to Rs. 70.07 million in 2069/70. For public school average annual expenditure was observed to increase from Rs.0.47 million in 2067/68 to Rs. 0.55 million in 2068/69 and slightly decreased to Rs. 0.54 million in 2069/70.

The expenditure categories are similar for private and public school and in each category private school spends almost ten times more than public school. It is observed that private school spend on average Rs. 5.2 million on teacher salaries compared to about Rs. 0.45 million by public school. While Rs. 0.14 million is spent on advertising by private school, it is significantly less at Rs. 0.006 million spent by public school. Private school spends on an average Rs. 0.12 million on non-teaching staff, this amount is Rs. 0.08 in public school. Private school spends around Rs. 0.09 million on purchase of books and stationery as well as transportation. Public school spends around Rs. 0.03 million on purchase books and stationery and around Rs. 0.01 million is spent on transportation. About Rs. 0.1million is spent by public school on construction while it was observed to be Rs. 0.08 million in private schools. Average annual expenditure on maintenance was observed to be Rs. 0.07 million in private school and Rs. 0.1. Around Rs. 0.04 million is spent by private school on purchase of equipment and furniture, it is Rs. 0.02 million in public schools. Likewise, Rs. 0.07 million is spent by private school on utilities; it is Rs. 0.01 in public school. Public school were observed to provide on an average Rs. 0.01 million on scholarships while private school provided scholarships of about Rs. 0.07 million.

Table 3. Expenditure categories in private and public school

Expenditure categories	Private	Public
Teacher Salaries	5,207,607.55	456,294.13
Major construction	84,316.96	102,685.68
Non-teaching staff Salaries	121,719.27	86,112.80
Bulk purchases of books/ stationery	90,984.90	37,738.39
Scholarships	75,466.39	19,326.98
Transportation	90,097.82	13,595.13
Maintenances	75,850.03	10,926.12
Equipment / Furniture	46,745.07	27,439.89
Advertising	142,740.51	6,181.17
Utilities	73,233.91	15,618.06
Other expenditure	967,221.68	61,958.49

Private school spends more to maintain a standard of education that they have set. These standards are one of the prime factors of attracting students. Parents and students are attracted by factors such as past performance in board examination, extra-curricular activities, library, computer lab facilities and discipline maintained in the school. Non-teaching staffs were observed to be more in private school compared to public school. It would not be wrong to say that private school is becoming more of a business and less of education providing institution. There is a large competition and household those have better income have lot of choice. For household with lower income choices are mostly limited to scholarships or studying in public schools.

7. Household financing in school

As there is low investment of government in HSE, almost entire cost of high school is borne by the household sector. This section shows how household income and expenditure varies across streams (science, management and others) in public and private school within and outside Kathmandu Valley. It is based on sample students of Kathmandu, Lalitpur, Bhaktapur (Inside Kathmandu Valley), Kaski, Rasuwa, Dolakha and Banke (Outside Kathmandu Valley). Although this data cannot be used to generalize the overall situation of the country, it gives an initial idea of expenditure incurred by household in schools.

The student questionnaire focused on annual household income, annual living expenditure and annual expenditure on school. Furthermore, interviews were also held with parents of students studying in private as well as public school which indicate that in general education in private school are more expensive compared to public school and parents would prefer private school given that household income is sufficient.

8. Household income

This section gives different sources of income of households of students studying in private and public school.

Average household income of students is given across location (inside and outside Kathmandu Valley), type (private and public) and stream (science, management and others). Further six different categories of household income have been derived and distributions of students in these categories are observed based on location and type of school.

8.1 *Sources of income*

Various sources of income were observed among households of student going to public and private school. Households had a combination of income sources. Major income sources observed were remittance, services (government, private and pension), trade/business, agriculture, wage labor and other sources.

In both private as well as public school remittance was observed to the major source of income. It contributes about Rs. 215,745.46 annually in sampled households of students going to private school. While remittance income contributed on an average Rs. 121,266.67 in households of students going to public school. Service (government, private and pension) contributes Rs. 168,824.37 on an average annually in households of students going to private school. In households of students going to public, school contribution of service is fairly less around Rs. 49,860.71. Likewise, average income generated from trade/business is larger in households of student going to private school (Rs. 139,839.93) compared to households of student going to public school (Rs. 36184.67).

Similar is the case for agriculture which generates around Rs. 90,821.43 annually in households of students going to private school compared to Rs. 47,714.06 in households if students going to public school. In households of student going to public school, income from wage labor is larger (Rs. 32,060.61) compared to households of student going to private school (Rs. 2,854.55). Household income of students going to private school is larger than that of students going to public school. Parents have to make tradeoff between cost of school and quality of education. With limited income parents do not have choice but to send their children to public school.

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8.2 *Average annual income across location, streams and type*

Students were categorized according to streams, type of school and location of school. In some cases there were more than two students studying in school from the same family. However each student has been treated as an individual unit for the purpose of comparison. The average income varies for household of students across streams, location and type. Average annual income of household of students going to private school inside Kathmandu Valley is about Rs. 384,747.06 while it is Rs. 164,657.14 for households of students going to public school. It is observed that in private school household income is the largest for students studying science (Rs. 409,436.07) followed by management (Rs. 373,166.67) and others (Rs. 207,000.06). For students of public school inside Valley annual income was observed to be greater for students studying management (Rs. 164,657.14) followed by others (Rs. 156,006.67).

Households outside Kathmandu Valley were observed to have lower income levels for sampled students. Average income for households of students going to private school is observed to be higher (Rs. 300,029.14) compared to the households of students going to public school (Rs. 121,372.65). It is observed that household income is larger for students of management (Rs. 334,944.67) followed by science students (Rs. 305,105.85) and other students (Rs. 217,000.32). in public school outside Kathmandu Valley average annual income was observed to be higher for students of other streams (Rs. 127,963.66) followed by management (Rs. 125,248.45) followed by science (Rs. 100,150.32).

Table 4. Household preference of school by income level inside and outside Kathmandu Valley

Location	Type of school	Income categories (Rs.)						
		Less than 100,000	100,000 to 200,000	200,000 to 300,000	300,000 to 400,000	400,000 to 500,000	Above 500,000	Total
Inside Kathmandu Valley	Private	-	-	8.70%	13.00%	13.00%	2.20%	37.00%
	Public	8.70%	43.50%	10.90%	-	-	-	63.00%
	Total	8.70%	43.50%	19.60%	13.00%	13.00%	2.20%	100.00%
Outside Kathmandu Valley	Private	2.00%	4.10%	24.50%	20.40%	4.10%	2.00%	57.10%
	Public	20.40%	20.40%	2.00%	-	-	-	42.90%
	Total	22.40%	24.50%	26.50%	20.40%	4.10%	2.00%	100.00%

Within and outside Kathmandu Valley it was observed that households having larger income preferred private school. In Kathmandu Valley all students studying in private school had household income greater than Rs. 200,000 while students of public school did not have household incomes greater than Rs. 300,000. In private school outside Valley household income varies from less than Rs. 100,000 to greater than Rs. 500,000. it is also possible that students have under-reported or over-reported household income. This result however is only true for sampled students and cannot be generalized for all school.

9. Household expenses

There are many sources of household expenses. The household expenditure has been categorized into living expenditure and HSE expenditure. These categories have been further broken down according to location, type and streams. It is necessary to understand household living expenditure and household expenditure on HSE. HSE has more burdens on household compared to school education. As reported by parents (case three) expenditure on school is increasing every year. School has to meet the increasing operation cost and with little government

support (for public school) school have no choice but to increase the monthly fee. Once enrolled parents do not have the choice but to pay the fees as they are concerned about their children. Students do not receive their certificates without clearing their dues. In private school students are imposed fines if their dues are not cleared on time. Apart from education fee submitted to college, students require personal expenses for stationary, college dress, buying books and daily snack expenses. These additional expenses are observed to be higher for students of private school compared to public school. For students sampled in the study, monthly expenses were incurred by the family.

9.1 *Living expenses*

Living expenses have been calculated by grouping various expenditure categories into seven categories. Cost on food consists of cost on cereals, pulses, vegetables, condiments, meat, eggs and so on. Education expenses are the combination of monthly fee, annual charges, cost of stationeries, hostel fees, pocket money transportation and other expenses. Expenses on utilities are the sum of annual expenses on electricity, internet and drinking water. Expenses on energy are the sum of expenses on fuel wood, kerosene and cooking gas.

Living expenses are greater for households of students studying in private school compared to households of students studying in public school. Expenditure on food is the largest expenditure for both households. On an average about Rs. 149,833.6 is spent by households of students going to private school on food. It is comparatively less for households of students going to public school at Rs. 95,133.1. The annual expenditure on education is more than twice (Rs. 78,130.2) for households of students in private school compared to public school (Rs. 25,945.68). Expenses on health a service is also greater in households of students going to private school (Rs. 49,981.13) compared to students going to public school (Rs. 32,662.27). Expenses on utilities are greater for households of students of private school (Rs. 39,731.24) compared to households of public school (Rs. 19,631.13). Expenses on rent are almost similar for both types of households. For households of student going to private school it is Rs. 21,799.43 compared to Rs. 18,634.34 for households of student going to public school. Likewise, expenses on energy are also greater for households of student going to private school compared to households of students going to public school.

Expenditure is observed greater for households of student going to private school as the household income is greater. Expense on education is a major burden for household having lower income as there are not immediate returns to education. In this regards some parents prefer their children to work instead of gaining education. Some also thinks that secondary education is enough for their children. However there is an increasing awareness on requirement of higher secondary education. Parents of student going to public school want more subsidized education while parents of students going to private school want some regulation in increasing school charges.

9.2 *Household living expenses across location, streams and type*

Living expenses varies across students of different streams, type of school and location. It is observed that average household expense is almost double in households of students studying in private school inside Kathmandu Valley (Rs. 326,598.65) compared to households of students studying in public school (Rs. 143,104.71).

Largest household expense is observed in households of students of science stream (Rs. 349,623.80) followed by management (Rs. 30,434.17) and others (Rs. 229,856.29) in private school inside Kathmandu Valley. Household expenses are equally high in private school outside

Valley with household living expenses being the highest in students of science stream (Rs. 292,044.08) followed by management (Rs. 208,727.50) and other streams (Rs. 198,872.34). Household expense is slightly greater in households of students attending public school inside Kathmandu Valley (Rs. 143,107.28) compared to students attending public school outside Kathmandu Valley (Rs. 108,434.43).

Table 5. Average household living expenditure across type, stream and location

Study Location	Type of School	Stream	Average HH expenditure
Inside Kathmandu Valley	Private	Science	349,623.80
		Management	304,347.17
		Others	229,856.29
		Total	326,598.65
	Public	Management	147,104.71
		Others	139,376.33
		Total	143,107.28
Outside Kathmandu Valley	Private	Science	292,044.08
		Management	208,727.50
		Others	198,872.34
		Total	268,507.43
	Public	Science	189,474.45
		Management	111,896.70
		Others	114,322.86
		Total	108,434.43

Observing annual average living expenditure is not enough to understand the impact of examination board on household. Expenses specifically related to school have to be observed. The following section describes major expense incurred on examination board among households of students inside and outside Valley studying in public and private school across different streams.

9.3 *Expenses in examination board*

School fees including annual fee is the direct visible cost incurred in school. However, there are various other costs incurred by the student during exam. These costs include hostel fees, transportation, pocket money, educational tour expenses, expenses on sports, internet, uniform cost, books and stationery cost and other costs. These costs have been calculated for individual students. Although the cost is borne by household, these costs are incurred only on students. For categories such as room rent, total annual rent is divided by number of family members to gain individual expense on rent. Similar calculation has been done for internet.

Annual charge of private school is extremely high compared to public school. This is the single most charge that makes private school thrice as costly as public school. Private school charges various fees in the annual charge. Charges are taken for computer labs, internet, library,

extracurricular activities and so on. It was observed on an average student in private HSE had to pay around Rs. 32,493.33 compared to Rs. 2922 as annual charge in public school. Annual hostel fee or room rent is another category of major expenses. On average students of private school pay Rs. 24,842.11 as hostel charge or room rent compared to Rs. 16,018.12 paid by students of public school. Monthly fee is also high in private HSE which accounts to Rs. 17,520 as annual student expense while in public HSE it is only Rs. 5,172 students of private school spend twice as much as pocket money (Rs. 9,456) compared to students of public school (Rs. 4,564.8). Equally high is transportation expenses. Most private HSE provide transportation service. Annual expense incurred in transportation by students of private school is Rs. 6,535 compared to Rs. 3,216 incurred by students of public school. It was observed that most of private school had annual education tour while it was observed only in some public school. Internet and phone use is almost same in students of private (Rs. 5,613.33) and public (Rs. 5,292.89) school. Similar is the expense on uniform and books and stationery.

9.4 *Household expenses across location, streams and type*

It is observed that studying science in private colleges inside Kathmandu Valley is the most expensive of all school will average annual expenses of around Rs. 66,346.5. Students of science stream in private colleges outside Valley incur expenses of around Rs. 46,593 annually. Still lower is the annual expenses incurred by students of science stream in public school outside Kathmandu Valley (Rs. 23,065). This makes science the most expensive stream of study across streams and type of school inside as well as outside the Valley. Monthly fees in science stream is greater compared to other streams because of greater initial investment on lab and higher teacher salary of science teachers. Studying management in Kathmandu Valley is equally expensive (Rs. 53,232.67). It is almost twice of the cost in public school (Rs. 23,500.5) inside the Valley and almost thrice the cost of studying in public school outside the Valley (Rs. 13,245). Other streams that include humanities and education are cheaper compared to management and science.

Table 6. Expenditure on HSE across stream, type and location

Location	Type of School	Stream	Annual expenditure on education
Inside Kathmandu Valley	Private	Science	66,346.50
		Management	53,232.67
		Others	31,200.32
		Total	50,259.72
	Public	Management	23,500.50
		Others	11,703.67
		Total	17,602.09
Outside Kathmandu Valley	Private	Science	46,593.85
		Management	30,693.70
		Others	25,130.50
		Total	34,139.48
	Public	Science	23,065.33
		Management	13,245.22
		Others	11,172.14
		Total	15,827.38

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It is observed that students from household having low income inside the Valley are likely to be studying in management or in other streams. While outside Valley students from both low incomes group as well as high income group has chance of studying science. A large number of students come to Kathmandu Valley for school. Living cost is high in the Valley hence burden on household is large. Public school have their own constraints. Apart from minimal resources, students enrolling in public school are mostly students with low marks in the school Leaving Certificate (SLC) examinations. Hence it is very difficult for public school to maintain good student performance.

10. Conclusions

A comprehensive research on education financing still lacks in Nepal. Also, researches tend to focus more on public education financing. Alternative forms of education financing need to be explored and developed to overhaul the education system of Nepal. The Government may not be able to invest more on tertiary level education system but there have to be clear linkages established so that tertiary level education can reinforce and strengthen school level education system. The effectiveness of education financing has to be monitored through research and policy measures have to be designed to strengthen the education sector. Need of 'Education Financing Policy' is seen which would clearly mention financing mechanisms to be employed at different levels of education; clearly define roles of public, private and development partners so that they become more oriented towards need of the country and mention mechanisms for evaluation of financial effectiveness with provision for performance-based motivating through national recognition. Following conclusions are drawn from the study.

- Largest revenue earners are private schools of Kathmandu Valley followed by private colleges outside Kathmandu Valley.

- Student monthly fee is the largest source of revenue for both private as well as public school.

- Public school were found to employ strategies such as conducting religious activities and renting school property to gain additional revenue.

- Annual expenses is almost 10 times greater for private school compared to public school.

- Expenses on teacher salary is the largest for public as well as private school.

- Remittance is the major source of household income.

- Household income are highest for students of science stream studying in private schools of Kathmandu Valley.

- Household income are lowest for students of other streams in public schools outside Kathmandu Valley.

- Average annual household expenses on school are largest for science stream studying in private colleges in Kathmandu Valley.

- Average household expenditure is the highest in annual charges.

- Students of Kathmandu Valley spend more in pocket money compared to students outside Kathmandu Valley.

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Impact of Quality and Brand Image on Brand Loyalty of Bosnian Smartphone Users: Theoretical Model Development

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Abstract

The main purpose of this study is to provide conceptual theoretical framework with purpose to investigate effects of quality and brand image on brand loyalty of smartphone consumers in Bosnia and Herzegovina. Hypothesized relationships are to be investigated as this represents scientifically unexplored aspect of our daily lives. The methodology suggested to be used for data analysis is descriptive statistics and regression analysis in a case of quantitative approach whereby structured survey may be used as main data collection instrument. It is expected that results of this study will confirm hypothesized relationships. It is recommended for researchers to provide validation of the proposed model and investigate hypothesized relationships not only in Bosnia and Herzegovina, but also in other Western Balkan countries. The findings of this study will have implications for both scientists regarding their future scientific work, but also for practitioners in smartphones business regarding their marketing strategies.

Keywords: quality, brand image, brand loyalty, smartphones, Bosnia and Herzegovina, Western Balkans.

1. Introduction

According to report of Statista (2019), from year 2014 to 2020 there is a rise of 45% in smartphone users worldwide, which indicates that this is one of the future most innovations in ascendancy. As we can see from the results, there is a need for this study because today's life is unimaginable without smartphones and technology (Statista.com, 2019).

It is interesting to notice that decade ago it was very hard to find study about smartphones. At that point of time this device was still in form of it's, nowadays primitive cell phones. Significance of correspondence and keeping up the connections inside organizations brought about extraordinary importance of cell phones. Besides, cell phone is a gadget numerous customers can't appear to manage without. They utilize cell phone as an individual gadget to remain associated with loved ones and as an augmentation of their identity and singularity (Grant & O'Donohoe, 2007). As innovation keeps on advancing, cell phones are increasingly developed. According to Ting et al (2011), the cell phone has advanced from basically a relational specialized gadget to a sight and sound machine known as smartphone (Ting et al., 2011). According to

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Persaud and Azhar (2012), the present writing is increasingly about portable showcasing works on utilizing the great cell phone, with its extremely constrained ability, contrasted with the present smartphones, which have practically boundless potential. In this manner, there is a hole in the writing with regards to smartphones.
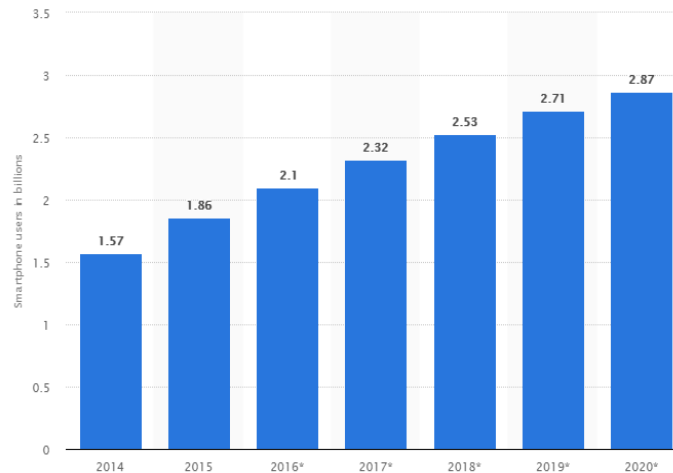

Figure 1: Number of smartphone users worldwide from 2014 to 2020 (in billions)

Having in mind insufficient attention of scientific researchers on smartphone related issues in Bosnia and Herzegovina Mekić and Özlen (2014), as well as complexity of Bosnian market the need and importance of this study is twofold, theoretical and practical.

Bosnia and Herzegovina was in a war from 1992 to 1995, and it is still in procedure of improvement. Despite the fact that joblessness rate is still high, numerous clients of Bosnia and Herzegovina are not late with regards to utilization of creative innovative gadgets such are smartphones, tablets and so on. Despite the fact that the versatile market is very re-imagined, and it turned out to be very hard to purchase basic cell phone rather than smartphone, there is still no experimental proof about components that invigorate clients to utilize smartphones in Bosnia and Herzegovina. Explanation behind leading this examination is the way that there is deficiency of writing about this issue in territory of Bosnia and Herzegovina (Mekić & Özlen, 2014). Our study is response to theoretical gap that exists in Bosnia and Herzegovina when it comes to research about quality, loyalty and image perceptions towards different brands in smartphones industry.

Hence, this examination isn't imperative for organizations, retailers of cell phones, authorized wholesalers and servicers of different versatile brands situated in Bosnia and Herzegovina, yet additionally outside of its limits, this paper will give bits of knowledge to potential new organizations into Bosnian market of smartphones so as to fulfill clients. This work will experimentally distinguish factors that impact clients to utilize smartphones which is imperative data for potential new participants of Bosnian portable market (Mekić & Özlen, 2014). Therefore, this study will help practitioners (smartphone retailers, wholesalers...) in Bosnia and Herzegovina to better understand factors affecting brand loyalty of smartphone users and improve their strategies accordingly.

The primary objective of this study is to understand factors affecting brand loyalty. The secondary objectives are as follows:

- To investigate effects of perceived quality on brand loyalty of smartphone
users in Bosnia and Herzegovina;

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- To investigate effects of brand image on brand loyalty of smartphone users in Bosnia and Herzegovina;
- To understand differences in perceived quality, brand image and brand loyalty of smartphone users in B&H having in mind respondents' differences in gender, age, income, and other relevant demographics
- To be roll model pioneer study and provide good grounds for future studies.

Structured survey compiled of previously validated scales will be used as a main data collection instrument. Methodology to be applied for purpose of data analysis in this study is descriptive statistics and multiple linear regression analysis. ANOVA methodology will be applied to investigate impact of demographical characteristics of respondents on variables (perceived quality, brand image, and brand loyalty). To provide all these analysis, Microsoft excel and software package for social sciences (SPSS 18) will be used.

Accordingly, the main research questions to be addressed by this study are:

- What are factors which are significant for brand loyalty of smartphone users in B&H?
- How significant are effects of perceived quality on brand loyalty of smartphone users in Bosnia and Herzegovina?
- How significant are effects of brand image on brand loyalty of smartphone users in Bosnia and Herzegovina?
- Is there a difference in perceived quality, brand image and brand loyalty of smartphone users in B&H having in mind respondents' differences in gender, age, income, and other relevant demographics?

The contribution of this study is threefold: theoretical, practical, and social. Theoretical contribution is assured by offering unique set of results never offered before by any researchers in the region of Bosnia and Herzegovina. Practical contribution is assured by giving valuable inputs to practitioners in smartphones sector of B&H and make them better understand ways to gain customers loyalty. Having in mind great impact of smartphones on society as a whole this study shall provide some contribution in that sense as well.

This study will be reported trough six sections. Literature review will help us identify variables, understand relationships and develop hypotheses. Section following literature review will graphically present key hypotheses through research model. Methodology section will explain in detail all procedures and statistical methods that will be applied to analyze collected data. After reporting findings under results sections adequate discussion and conclusion will be provided.

2. Lecture review

For purpose of this study, great number of relevant studies was addressed, and research model has been proposed.

2.1 *Definitions and concept evolution*

2.1.1 *Perceived quality*

Perceived quality of a product as turns into "the estimation made by the consumer relying on the whole set of basic as well as outer dimension of the product or the service" (Grunert,

2005). Perceived quality is a basic component for customer decision making process; thusly, buyers will contrast the nature of choices and respect to cost inside a classification (Jin & Yong, 2005). As indicated by Davis, Aquilano and Chase (2003), perceived quality is specifically identified with the notoriety of the firm that makes the item.

2.1.2 *Brand image*

According to Lee, Lee and Wu (2009), brand image as "perceptions about a brand as reflected by the brand association held in consumer memory". Brand image is the apparent capacities and representative relationship in the brain of clients and the quality and support of brand image relies upon the customer's esteem (Salciuviene et al. & De Mattos, 2009).

2.1.3 *Brand loyalty*

According to Son (2010), brand loyalty is "a deeply held commitment to re-buy or re-patronize a preferred product/service consistently in the future, causing a repetitive same brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior".

2.1.4 *Smartphones*

The term Smartphone can be characterized as programmable cell phone that offers propelled abilities and highlights so as to improve the execution of people by giving the services, for example, texting, downloading applications, using information services, for example, WiFi, global positioning system (GPS) and stimulation (Ting et al., 2011). The Smartphone is acknowledged to be one of the major strides in the advancement of mobile marketing technology and practices due to its Bluetooth incorporation, area based advertising, and other coordinated advances with online and physical store promoting (Persaud & Azhar, 2012). Smartphones give clients browsing messages, correspondence on person to person communication sites, and utilizing on the web visit paying little respect to time and place which make certain dimension of reliance on smartphone (Hudson, 2010).

2.1.5 *Smartphones in context of Bosnia and Herzegovina*

Despite the fact that Bosnia and Herzegovina is developing country, results of Mekić & Özlen (2014) research showed that Smartphone users of B&H are using these gadgets in numerous parts of their daily lives.

2.2 *Perceived quality and brand loyalty*

In 2015, Kim, Chang, Park, and Lee investigated the effects of quality on the satisfaction and the loyalty of smartphone users. They found that hypotheses was confirmed. Moreover, this study can be an important practical/academic reference to provide important hints to strengthen the relationship between the service providers and their customers (Kim et al., 2015).

According to study of Chen, Chen and Lin (2016) customers' perceived value, brand experience, trust, satisfaction, service quality and commitment are found to be the key influencing factors of brand loyalty. Related to the brand relationship quality for purchasing a smartphone,

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most respondents could hurriedly recall the symbolic logo of the brand and the after-sale service would affect their willingness of rebuying the same brand.

Brand loyalty expected to happen when perceived quality has been judged positively (Gürbüz, 2008). As per him when the client perceived the brand has extraordinary quality, they will create brand loyalty. He additionally expresses that perceived quality is the principle driver of brand loyalty and a positive quality assessment as a construct that keeps up social expectations. Boulding et al. (1993) states that there is a positive connection between perceived quality and brand loyalty and willing to recommend.

With respect to the connection between perceived quality and brand loyalty, a few investigations demonstrate a positive effect of perceived quality on purchase intention (Tsiotsou, 2006). Perceived quality is observed to be the primary forerunner of brand loyalty (Biedenbach & Marell, 2009).

As indicated by the Alhaddad (2015) discovering demonstrate that perceived quality affects both brand image and brand loyalty, on other hand, whatever is left of connection between brand loyalty measurements and brand loyalty is affirmed.

In line with reviewed literature following hypothesis is proposed for this study.

H1: Perceived quality has positive effects on brand loyalty.

2.3 *Brand image and brand loyalty*

Brand image plays an important role when consumer evaluates service and product and it is a driving force for customer brand loyalty (Chen & Myagmarsuren, 2011). According to them brand image influence attitudinal and behavioral response of customers toward brand, company and services. Kwon and Lennon (2009) also state that brand image crate strong company patronage intention among customers, and they are willing to pay premium prices and strong feeling and affiliation. As Pratama (2017) conducted in his study, result shows that brand image significantly has effect on brand loyalty when it comes to smartphone users.

Brand image is a standout amongst the most mind boggling elements and it influences loyalty in two different ways; first is customer prefer to show his own image and the second is individuals will in general arrange themselves into various social classifications that are assessment of targets and qualities in different gatherings in examination with customers' very own qualities and goal and they lean toward that who meet comparative objectives and values (Kuusik, 2007).

Brand image is one of the essential strides to achieve brand loyalty, in light of marking hypothesis it expressed that brand image must be compatible and parallel with the shoppers' image and it's a procedure and endeavor to meet mental and social needs. Moreover, brand image drives some critical component for the acknowledgment that is wealth, class, achievement, and style (Shehzad & Zehra, 2013).

"Brand image" of cell phones has critical impact on "brand loyalty" to pre-adult purchasers, and "consumption behavior" of immature has noteworthy impact on "brand loyalty", while "brand image" and "consumption behavior" impact "brand loyalty" through altogether interceding impact of "perceived response" (Lin & Chang, 2013).

In line with reviewed literature following hypothesis is proposed for this study.

H2: Brand image has positive effects on brand loyalty.

3. Hypotheses and research model

The figure belov represents research model based on the literature review for this study. The model proposes two hypotheses. Besides all above mentioned studies, huge contribution for this study is research model proposed and investigated by Hwa-Kyung Kim and Timothy J. Lee (2018). It is important to say that even though the model proposed in our study is in line with their model, it is important to have in mind that their study tested the model in tourism context. As this study deals with smartphones, slight adjustment of the model has been conducted.

H1: Perveived quality has positive effects on brand loyalty.
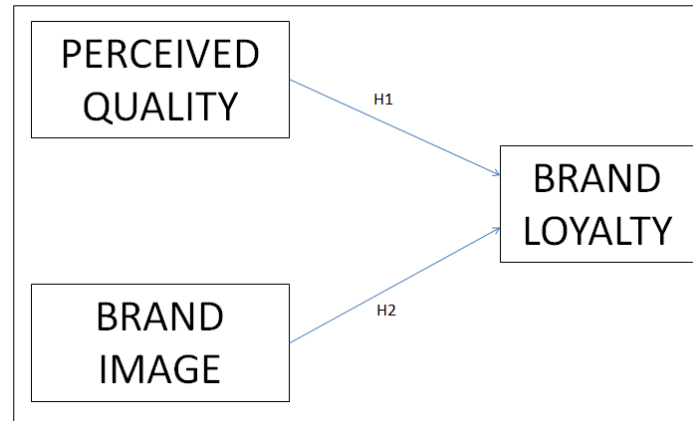
H2: Brand Image has positive effects on brand loyalty.

Figure 2. Research Model

Source: adjusted from Hwa-Kyung Kim and Timothy J. Lee (2018), and proposed for the study of smartphone users

Investigation of these hypotheses will help us answer following research questions:

- What are factors which are significant for brand loyalty of smartphone users in B&H?
- How significant are effects of perceived quality on brand loyalty of smartphone users in Bosnia and Herzegovina?
- How significant are effects of brand image on brand loyalty of smartphone users in Bosnia and Herzegovina?

4. Methodology

Structured survey compiled of previously validated scales will be used as a main data collection instrument. Methodology to be applied for purpose of data analysis in this study is descriptive statistics and multiple linear regression analysis. ANOVA methodology will be applied to investigate impact of demographical characteristics of respondents on variables (perceived quality, brand image, and brand loyalty). To provide all these analysis, Microsoft excel and software package for social sciences (SPSS 18) will be used.

5. Expected results

In line with conclusions based on literature, it is expected that all hypothesized relationships among variables will be confirmed. However, it is suggested to conduct testing of the

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proposed model using adequate measurement scales. Replication of the study in different geographical contexts across different time periods is strongly recommended. Still, regardless of the positive and optimistic forecast on supporting the proposed research model, it is on future researchers to test the model and provide empirical evidence.

6. Conclusion

This literature review aimed to provide conceptual framework as a basis to investigate effects of quality and brand image on brand loyalty of smartphone consumers in Bosnia and Herzegovina. Hypothesized relationships are to be investigated for the first time among smartphone consumers in this region, and therefore, this paper may serve as a pilot study and good introduction for new studies addressing this important, yet scientifically unexplored aspect of our daily lives. The methodology suggested to be used for data analysis is descriptive statistics and regression analysis in a case of quantitative approach whereby structured survey may be used as main data collection instrument. It is expected that results of this study will confirm hypothesized relationships between quality and brand loyalty as well as brand image and loyalty. It is strongly recommended for researchers to provide validation of the proposed model and provide responses regarding hypothesized relationships in the region of Bosnia and Herzegovina. Furthermore, it is also recommended to test the model in other Western Balkan countries to have basis for comparative studies. The findings of this study will have implications for both scientists regarding their future scientific work, but also for practitioners in smartphones business regarding their marketing strategies.

Acknowledgements

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Competitiveness of the Oil Market and Profitability of the Oil Industry in Federation of Bosnia and Herzegovina

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Abstract

This research examines different hypotheses that explain generic profitability within the framework of the hypothesis of efficiency, representing its main contribution to the use of direct measurement of efficiency through profitability and market competition. This measurement is achieved using pioneering techniques using a model in the scientific work _Profitability, market structure and efficiency_ by M. Gumbau and J. Maudos (2000). Evidence obtained enables us not to reject the hypothesis about the profitability of oil producers in B&H, to determine whether the concentration positively affects profitability, and further, the results in most cases, enabled us to reject a clean hypothesis of efficiency since, although efficiency contributes positively to explaining the differences in profitability, the market share, which encompasses the effect of market power, also has a positive impact on it. So, from results obtained we do not reject the hypothesis of profitability so that we find positive relationship between profitability and the market share of Oil industry in Federation of Bosnia and Herzegovina.

Keywords: profitability, market share, market structure, competitiveness.

1. Introduction

This study investigates degree of competitiveness of oil industry and tests whether the industry exhibits features of oligopolistic market structure by studying profit margins of oil companies compared to the more competitive industries in the state.

In the field of industrial organization, the analysis of the relationship between profitability and market structure has given rise to abundant literature of both theoretical and empirical nature.

There are two alternative hypotheses that have been put forward to explain the positive correlation usually found between performance and market share (concentration). First hypothesis, the so called traditional hypothesis of collusion, or structure-conduct-performance paradigm (Bain, 1951), affirms that concentration favors the adoption of collusive agreements, thus leading to the obtaining of monopoly rents. Muller (1977) in his study _The persistence of profits above the norm_ stated that high profits are associated with high concentration and entry barriers.

Secondly, the hypothesis of efficiency (Demsetz, 1973, 1974) posits that concentration of the market is the result of the greater efficiency of some firms, which consequently gain in

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market share and are more profitable. In this case, the positive correlation between profitability and concentration is spurious, efficiency being the variable that genuinely explains profitability.

Usually, the way of testing both hypotheses has been to introduce concentration and market share as explanatory variables of profitability, on the assumption that market share will reflect the effect of efficiency. In this case, if the market share positively affects profitability, and concentration is not significant, the hypothesis of efficiency is not rejected (Gumbau & Maudos, 2000: 3).

Gumbau and Maudas (2000) agree that differences in efficiency are identified with differences in market share, because increasing returns to scale are being assumed. Thus, large sized firms produce with lower unit costs thus obtaining higher levels of profitability.

1.1 Background of the study

We test the relationship between profitability and market structure following the methodology of Gumbau and Maudos (2000) which explains the relationship between profitability and market structure, and the interpretation of the relationship between profitability and market share in Spanish industry (*Ibid.*, 2000: 5-13).

Sousa (2015) states that studies on market structure and firm performance are of four kinds (four empirical studies): Structure-Conduct-Performance (SCP), Relative Market Power (RMP), Efficient-Structure Hypothesis (ESS) and X-efficiency version (ESX), although the SCP and RMP dominate (Sousa, 2015: 6).

The SCP theory is based on concentrated markets taking into account that prices in those markets lead to discouraging consumption (Berger, 1995). The RMP focuses on companies' profitability when companies have large market share imposed in the market due to power engaged in business and pricing (Berger, 1995).

Normally, the market power is accomplished by factors that companies use such as the level of advertising, the size of the firm and the high firm growth. ESX and ESS are both based in explaining that lower costs leading to higher profits. The difference is that ESX focuses on how management and the consequences of a good or bad administration combined with production technology can lead to a better financial performance of firms.

The theory of industrial organization provides classical models of oligopolistic behavior as a framework for analyzing the determinants of profitability. Firms are considered to compete in the market for a good, maximizing their profits. Each of them, in turn, operates in an industry in which the strategies of the other firms can interact with its own.

This analysis is done for the purpose of portraying Oil industry's profits, as presumably a monopolistic industry, in comparison to profits from organizations of more competitive market. Also, very often in media it has been stated that prices of Oil in our country do not go down compared to price movements in the global oil markets.

We follow the premise that unlike in competitive markets monopolies limit production in order to keep prices and profits high. Their market power usually makes economy less productive. High prices in monopolistic market also go in the purchasing power of wages. In the study by IMF evidence for this theory was provided, where the markups over marginal cost charged by over 900,000 firms in 27 countries was studied. They realized that markups rose for 8% mostly in the US and by a smaller amount in Europe. Also IMF states that in most places, small share of firms are responsible for rising markups (*Economist*, 2019: 61).

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1.2 *The Oil industry in Federation of Bosnia and Herzegovina*

In the *Study of energy sector in B&H* (Granić et al., 2008) the current state of the oil sector and its detailed analysis is presented. The study concluded that the market for petroleum products in B&H is almost completely dependent on imports, which was one of the most important aspects for analysis. According to the available data, the consumption of derivatives in Bosnia and Herzegovina ranged from about 800,000 tons in 2000 to 1.3 million tons in 2005. Imports of petroleum products were mostly made in Croatia, Serbia, Montenegro and Hungary. According to the structure of final consumption, the largest share in the final consumption of petroleum products is occupied by traffic (almost 70%), followed by industry with 12%, households with 10%, agriculture with 8% and service sector with only 2%. The structure of consumers of certain types of derivatives was determined on the basis of a survey carried out in both Entities and Brčko District and on the basis of data collected from competent institutions. The survey covered 4,000 households and 739 companies from the industry and services sector.

In Bosnia and Herzegovina, there are over 800 gas stations, many of which were built after the adoption of the Law on Private Economy in Bosnia and Herzegovina in 1990. In terms of competitiveness, this can be considered somewhat acceptable, but in terms of economy, it is certainly irrational investments, and now the operation of a certain number of petrol stations takes place at the profitability limit, and some of them are closed.

It is important to note that in Bosnia and Herzegovina exists the so-called "free forming of price", i.e. price determines the market. Compared to EU countries, retail prices of derivatives are significantly lower in B&H, but this is solely due to lower excise duties and taxes. If the net prices are compared, then they are somewhat higher in B&H than in the EU countries. Special reference was made to the legal regulations related to the quality of liquid petroleum fuels in the European Union, the Republic of Croatia and Bosnia and Herzegovina. The Republic of Croatia has largely harmonized its laws with the EU directives, and for a certain period of time, it is possible to produce and sell certain quantities of derivatives that are not in line with EU standards. B&H has set standards for the quality of liquid petroleum fuels that have been harmonized with EU standards, whereby fuels produced in B&H over a certain period of time can deviate quality from standards prescribed in the EU.

The decision on the free formation of prices of motor gasoline, diesel fuel and fuel oil (*Official Gazette FB&H*, 52/00) of the prices of petroleum products are formed freely, with the customs, special tax on petroleum products (excise), road fees tolls / tolls) and value added tax are calculated in accordance with the relevant regulations.

All other information, charts and researches on Oil sector in B&H are available in *ESSBIH Treći projekat obnove, Studij energetskog sektora BIH*, konačni izveštaj (Granić et al., 2008) [Third project of renovation, Study of energy sector in B&H, final report, 2008].

1.3 *Research objective*

In the first part of the paper, the retail oil derivatives industry will be analyzed to provide some general information and trend analysis in comparison to the competitive industry of Logistics services in Federation of Bosnia and Herzegovina. In the second part of the paper we test the hypothesis of positive relationship between firm profitability and the structure of the market in which the firms operate.

This study aims to provide a detailed insight into the competitiveness and profitability of the Oil market industry in Federation of Bosnia and Herzegovina.

The main objective of this research paper is to answer the following research questions:

- What is the market structure in which oil firms operate?
- How profitability of Oil sector in B&H behaves over time in relation to Logistics service sector?
- What is the relationship between main financial variables of both oil companies and logistics service companies, such as gross profit margins and the market size of the company?

Generically, two alternative hypotheses have been put forward to explain positive correlation usually found between performance and concentration, i.e. market share. Traditional hypothesis of collusion or structure-conduct performance paradigm (Bain, 1951) leading to the obtaining of monopoly rents. The hypothesis of efficiency (Demsetz, 1973) posits that concentration of the market is the result of the greater efficiency. Shepard (1982) argues that firms may have market power when they enjoy high market shares.

One solution to the problem of the degree of confidence in the use of market share as a proxy for efficiency is to assume different level of efficiency in the market.

In recent years several studies have been made to test the various hypothesis explaining the relationship between profitability and the market structure:

- The main methodological contribution of Schmalensee (1987) is the analysis of the implications of relaxing the assumption of constant returns to scale,
- Mazon (1993) using data from the Central Balance Sheet of the Bank of Spain also obtains the results that support hypothesis which states that there is positive relationship between market structure and efficiency of the market, using market share as a proxy of efficiency.

We follow the approach by Mercedes Gumbau and Joaquín Maudos of testing the relationship between profitability, market share and efficiency. We do not measure efficiency directly through production frontier techniques, but we measure by various assumptions of efficiency (Gumbau & Maudos, 2000).

1.4 *Significance of the study*

This study brings closer overview of the Oil industry and Logistics service industry in Federation of Bosnia and Herzegovina. Data obtained through Business Intelligence System will give us closer overview about the market in which both industries are competing, what is their degree of competitiveness, how profitability behaves over time for each of the industry. Also this article will be comparing profits of Oil industry with Logistics service industry through five year period, to see if the Oil industry is annoying the profits above the norm.

Also this study will offer new evidence on the relationship between profitability and the market structure and the interpretation of the relationship between profitability and the market share in the B&H Oil industry.

By testing the relationship between profitability, market share and efficiency the study's main contribution is to accept the hypothesis which states that there is positive relationship between profitability and market structure.

Also contributions of this study is to offer statistical and real data about the Oil industry in B&H which directly affects the economic activity and standard of lives in the country, as uncompetitive markets result in dead weigh losses, or loss of welfare for the consumers.

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2. Research methodology

The main hypothesis tested is:

H0: *There is a positive relationship between firm profitability and the structure of the market in which the firm operates.*

Control group of the research is Logistics service industry which is operating in the highly competitive market comparing to oil firms.

Traditionally, the most usual way of testing hypothesis has been to introduce concentration and market share as explanatory variables of profitability, on the assumption that market share will reflect the effect of efficiency. In this case, if the market share positively affects profitability, and concentration is not significant, the hypothesis of efficiency is not rejected. Normally, differences in efficiency are identified with differences in market share, because increasing returns to scale are being assumed.

The market structure model measures: Concentration, Market Share and the logarithm of the turnover or number of employees (both scale variables). Concentration is computed by Herfindahl-Hirschman Index known as HH Index or HHI and the Market Share (MS) as a percentage (share) of the volume of turnover in each firm in the total of the sector where the firm belongs.

In order to answer our first research question the following will be used: (1) Concentration ratio, and (2) Harfindahl-Hirschman index HHI.

Industrial concentration reflects the number and size of an enterprise in a given market share. Harfindahl-Hirschman index is measured by the sum of the squares of the market shares of individual enterprises in the industry. This index can have a value of up to 10,000.

Calculation of HHI will be calculated from formula:

$HHI = s_1{}^2 + s_2{}^2 + s_3{}^2 \ldots + s_n{}^2$ – where s_n is the market share percentage of firm *n* expressed as a whole number, not a decimal.

Market share is calculated as its sales measured as a percentage of an industry's total revenues. A company's market share is determined by dividing its total sales or revenues by the industry's total sales over a fiscal period.

In order to study how profitability of Oil sector behaves over time compared to Logistics service sector, we will observe and compare the profitability curve for Oil sector and Logistics services sector in Federation of Bosnia and Herzegovina over the period 2014-2019. In this research five year profitability of both sectors will be compared and graphically represented to have a clear image of observed data.

For analysis of the profitability we will follow methodology and use the model from Mercedes Gumbau and Joaquín Maudos in their article (Gumbau & Maudos, 2000).

The theory of industrial organization provides classical models of oligopolistic behavior as a framework for analyzing the determinants of profitability. Firms are considered to compete in the market for a good, maximizing their profits. Each of them, in turn, operates in an industry in which the strategies of the other firms can interact with its own.

According to the pure efficient structure hypothesis the most efficient firms will have lower costs and therefore higher profits, and in this way they gain market share, consequently increasing concentration. Nevertheless, although it is efficiency that leads to a higher market share and concentration, these latter should not bear any relationship to profitability once efficiency has been introduced into the estimation. Thus, according to the hypothesis of efficient structure, the expected signs of the relationship are as follows: EF>0, CR=0, MS=0.

Observe that the efficient structure hypothesis further requires that efficiency leads to a higher market share and greater market concentration. That is to say, that an additional necessary condition for sustaining this hypothesis is that efficiency be an explanatory variable of market share and concentration, and that they be positively correlated.

The introduction only of market share, concentration and efficiency as explanatory variables of profitability may give rise to an omitted-variable bias given the possible existence of other variables that explain profitability. These variables are specific to firms or to the markets in which they operate.

It is usual in this type of models to assume that there are constant returns to scale, so that empirically it is possible to proxy the price cost margin by the value of production minus variable costs divided by the value of production. However, as pointed out by Schmalensee (1989) this specification omits capital costs. The traditional solution to this problem is to introduce capital intensity as a further explanatory variable (KI).

Other control variables are also included in the regression so as not to ignore the differences occurring among firms and the sectors in which they work. For the differences among firms, we introduce variables that quantify the entrance barriers associated with advertising intensity (ADV) and the innovation effort made by the firm (R&D), while for the differences among markets we introduce the variables that control for the demand conditions of the market in which the firm operates (stable, expanding or receding market) (STA, EXP, REC) and the possible existence of entrance barriers associated with the minimum efficient size of firms (NCOMP1, NCOMP2).

The advertising effort made by a firm is considered to be an entrance barrier, or production cost to be incurred by a firm that aims to enter an industry but not borne by the firms already installed. It is understood that a higher relative advertising expenditure implies greater differentiation of the product manufactured, and that inelasticity of the cross-price demand curve faced by the firm is greater in this case, so the firm may obtain higher profits per unit of production.

We also control for the effects exercised by economic opportunities on the profitability of firms. It is to be expected that those firms that operate in expanding or stable markets will have more economic opportunities than those in markets with receding demand, and therefore, that the profits of the former will be more favored than those of the latter.

Finally, it is well known that the presence of barriers to the entrance of new competitors reduces the chances of survival of a firm in the market. For this reason, it is necessary to consider the possible effect of these entrance barriers on the profits of firms.

Therefore, the equation to be estimated is as follows:

$$PCM_i = a_0 + a_1 MS_i + a_2 CR_j + a_3 EF_i + a_4 KI_i + a_5 ADV_i + a_6 R + D_i +$$
$$a_7 STA_i + a_8 REC_i + a_9 NCOMP_{1i} + a_{10} NCOMP_{2i} + e_I$$

Equation 1

Where:

1. Price-cost margin (PCM): variable will be calculated by net profit divided by total sum of sales of the organization.
2. Efficiency (EF): following variables will be used through authors assumptions of industrial efficiency:
   - 50% or 0.5 variable of efficiency is low efficient market,
   - 75% or 0.75 variable of efficiency is moderate efficient market,
   - 95% or 0.9 variable of efficiency is highly efficient market.

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3. Capital intensity ratio (KI) of a company is a measure of the amount of capital needed per dollar of revenue. It is calculated by dividing total assets of a company by its sales. It is reciprocal of total asset turnover ratio.

4. Concentration (CR) – Harfindahl-Hirschman index is measured by the sum of the squares of the market shares of individual enterprises in the industry. This index can have a value of up to 10,000.

5. Market share (MS) – The sales of the firm as a percentage of the main market in which it operates.

6. Conditions of the market in which the firm operates (stable, expanding or receding market) (STA, EXP, REC).

7. Research and Development (R&D) – instrumental variable will be used by using ratio of proxy R&D expenditure/sales of the firm.

8. The existence of barriers of entry – NCOMP1 – to denote that the firm considers itself to have more than 25 competitors in its sector with a significant market share, and NCOMP2 – 10 of fewer competitors with significant market share.

9. Advertising effort made by each firm (ADV) – instrumental variable will be used by using ratio of proxy of advertising costs divided by sales.

3. Data analysis and interpretation

3.1 *The market structure of Oil industry and Logistics service industry*

In order to study *the market structure in which oil firms operate* the following will be used: (1) Concentration ratio, and (2) Harfindahl-Hirschman index HHI.

Industrial concentration reflects the number and size of an enterprise in a given market share. Harfindahl-Hirschman index is measured by the sum of the squares of the market shares of individual enterprises in the industry. This index can have a value of up to 10,000.

Calculation of HHI will be calculated from formula:

$HHI = s_1{}^2 + s_2{}^2 + s_3{}^2 ...+s_n{}^2$ – where s_n is the market share percentage of firm n expressed as a whole number, not a decimal.

A company's market share is determined by dividing its total sales or revenues by the industry's total sales over a fiscal period.

For better analysis of competitiveness in individual markets, it can be use the following division of market structures using Harfindahl-Hirschman's index.

Table 1 (Begović et al., 2002: 35)

Value HHI	The degree of concentration
HHI<1000	Unconcentrated (Low-concentrated)
1000<HHI<1800	Medium concentrated supply
1800<HHI<2600	Highly concentrated supply
2600<HHI<1000	Very highly concentrated supply
HHI=1000	Monopoly concentrated supply

The significance of the index is reflected in the fact that although it respects the individual market the participation of all companies in the branch, he nevertheless responds in particular to the presence of the company with a large market share, which significantly increase its value (Lipczynski & Wilson, 2001: 110). This index, theoretically, may have a value between 0 to 10,000. In the case of atomized supply, when there is a huge number of manufacturers and when the offer of each of them tends to 0 and the index value tends to 0. At the monopoly value

the index is 10,000, because the offer of the monopoly company is equal to the whole offer branches (Begović et al., 2002: 33).

We have analyzed the top 10 firms with the highest total sales in the industry code *46.71 Wholesale of fuels* for the period 2014-2019.

$$HHI_{2014} = 14^2 + 14^2 + 11^2 + 2^2 + 2^2 + 1^2 + 1^2 + 0^2 + 0^2 + 0^2 = 523$$

$$HHI_{2015} = 30^2 + 17^2 + 13^2 + 10^2 + 5^2 + 5^2 + 2^2 + 2^2 + 2^2 + 2^2 = 1524$$

$$HHI_{2016} = 30^2 + 16^2 + 13^2 + 10^2 + 5^2 + 5^2 + 3^2 + 2^2 + 1^2 + 1^2 = 1490$$

$$HHI_{2017} = 30^2 + 15^2 + 12^2 + 11^2 + 6^2 + 4^2 + 4^2 + 3^2 + 2^2 + 1^2 = 1472$$

$$HHI_{2018} = 34^2 + 15^2 + 15^2 + 10^2 + 4^2 + 4^2 + 2^2 + 2^2 + 2^2 + 1^2 = 1751$$

The significance of the index is reflected in the fact that although it respects the individual market participation of all companies in the branch, he nevertheless responds specifically to the presence of the company with a large market share, which significantly increases its value (Lipczynski & Wilson, 2001: 110).

Even though values of HHI calculated fit into Medium concentrated type of market, more important observation is the fact that just up to ten firms in the whole industry have percentage of market share above 1%, and one has the largest share in industry of 30-40% market share which is more than double of every other firm in the industry.

So here we can conclude even if the market ostensibly looks sort-of competitive, the market share of each firm calculated shows us that there is one leading company in the industry over the observed period of time and all other things constant, market share is continuously rising for this particular firm.

3.2 Behavior of profitability of Oil sector compared to Logistics service sector 2014-2019

How profitability of Oil sector in B&H behaves over time in relation to Logistics service industry is answered and described below.

We have compared the total revenues of Oil sector in Industry codes *46.71 Wholesale of fuels and 47.30 Retail sale of motor fuels* and total revenues of Logistics service sector in Industry codes *53.10 Postal and courier services and 53.20 Additional activity of other postal and courier services* over the period 2014-2019.

Table 2. Profitability of Oil sector and Logistics sector over period

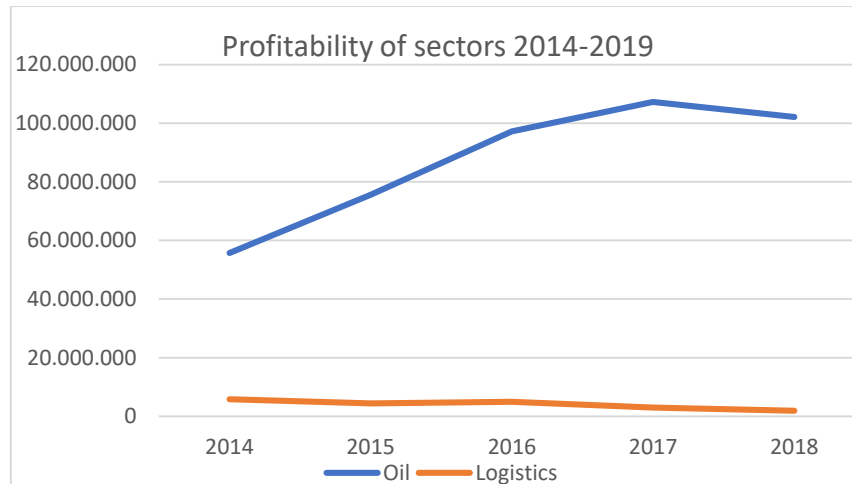| Period	Net profit - Oil sector	Net profit - Logistics service sector
2014	55,716,756	5,824,053
2015	75,613,612	4,367,532
2016	97,190,404	4,952,778
2017	107,264,045	3,023,051
2018	102,135,058	1,835,290

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Figure 1. Comparing differences in profits of two sectors

In comparing the differences in profitability of two sectors we used simple comparison of Net profits over the period for both Oil sector and Logistics service sectors to have the clear image of differences in profitability.

Using this simple descriptive chart, we have clear image of huge differences in profitability of Oil sector over the Logistics service sector. Also the Oil sector profitability multiplies two times from 2014 until 2018 (from 55,716,765 KM in 2014 to 102,135,058 KM in 2018), where we can see the curve facing upwards.

On the other hand we see the decreasing trend in profitability of Logistics service sectors where profitability of industry in 2014 was 5,824,052 KM and multiple times lower in 2018 where the profitability of the industry was just 1,835,290 KM

Based on the data, there is a huge gap between two curves which represent the profitability of Oil sector over the Logistics service sector.

Based on this research and observation, we can state that Oil industry in FB&H is surely enjoying the profits above the norm comparing to other industries in country.

3.3 *The relationship between main financial variables, gross profit margins and the market size of the company*

As explained in methodology section the above stated relationship will be studied estimating the following equation using the Linear regression model through EViews statistical program:

This will be answered through the equation to be estimated is as follows:

$$PCM_i = a_O + a_1 MS_i + a_2 CR_j + a_3 EF_i + a_4 KI_i + a_5 ADV_i + a_6 R + D_i +$$

$$a_7 STA_i + a_8 REC_i + a_9 NCOMP_{1i} + a_{10} NCOMP_{2i} + e_i$$

Where:

1. Price-cost margin (PCM): variable will be calculated by net profit divided by total sum of sales of the organization.
2. Efficiency (EF) following variables will be used through authors assumptions of industrial efficiency:
   - 50% or 0.5 variable of efficiency is low efficient market,

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- 75% or 0.75 variable of efficiency is moderate efficient market,
- 95% or 0.9 variable of efficiency is highly efficient market.

3. Capital intensity ratio (KI) of a company is a measure of the amount of capital needed per dollar of revenue. It is calculated by dividing total assets of a company by its sales. It is reciprocal of total asset turnover ratio.

4. Concentration (CR) – Harfindahl-Hirschman index is measured by the sum of the squares of the market shares of individual enterprises in the industry. This index can have a value of up to 10,000.

5. Market share (MS) – The sales of the firm as a percentage of the main market in which it operates.

6. Conditions of the market in which the firm operates (stable, expanding or receding market) (STA, EXP, REC)(0.1-1).

7. Research and Development (R&D) – instrumental variable will be used by using ratio of proxy R&D expentidure/sales of the firm.

8. The existance of barriers of entry – NCOMP1 – to denote that the firm considers itseflt to have mora than 25 competitors in its sector with a significant market share, and NCOMP2 – 10 of fewer competitors with significant market share.

9. Advertising effort made by each firm (ADV) – instrumental variable will be used by using ratio of proxy of advertising costs divided by sales.

Following the described model below are the results for Oil industry sector considering 50% efficiency of industry, 75% efficiency of industry and 95% efficiency of industry:

- Considering that Oil industry is 50% efficient, through EViews statistical program we have obtained following results:

Included observations: 597				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
NCOMP	-204.0633	1538.247	-0.132660	0.8945
EF	81.69752	8757.471	0.009329	0.9926
EX	-57.23547	4378.742	-0.013071	0.9896
ADV	-0.003377	0.062715	-0.053842	0.9571
CR	-8.951699	167.6666	-0.053390	0.9574
KI	0.000176	0.003458	0.050848	0.9595
MS	136.3312	745.3170	0.182917	0.8549
RD	0.036914	0.325572	0.113383	0.9098

R-sqaured 0.000163	Mean dependent var -397.2010
Adjusted R-squared -0.011720	S.D. dependent var 8042.210
S.E. of regression 8089.201	Akaikr info crit 20.84776
Sum squared resid 3.85E+10	Schwarz criterion 20.90661
Log likelihood -6215.056	Hannan-Quin crit. 20.87067
Durbin-Watson stat 2.008845	

• Considering that industry is 75% efficient, through EViews statistical program we have obtained following results:

Included observations: 597				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
NCOMP	-208.7840	1527.882	-0.136649	0.8914
EF	168.9993	4156.546	0.040659	0.9567
EX	-133.8648	3458.070	-0.038711	0.9691
ADV	-0.003367	0.062715	-0.053682	0.9572
CR	-9.110440	117.6214	-0.054351	0.9567
KI	0.000175	0.003458	0.050658	0.9596
MS	139.9555	742.2130	0.188565	0.8505
RD	0.036909	0.325572	0.113368	0.9098

R-sqaured 0.000163	Mean dependent var -397.2010
Adjusted R-squared -0.011720	S.D. dependent var 8042.210
S.E. of regression 8089.201	Akaikr info crit 20.84776
Sum squared resid 3.85E+10	Schwarz criterion 20.90661
Log likelihood -6215.056	Hannan-Quin crit. 20.87067
Durbin-Watson stat 2.008864	

• Considering that industry is 95% efficient, through EViews statistical program we have obtained following results:

Included observations: 597				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
NCOMP	-213.3835	2341.393	-0.091135	0.9274
EF	51.29109	4721.190	0.010864	0.9913
EX	-43.68912	4605.107	-0.009487	0.9924
ADV	-0.003370	0.062715	-0.053741	0.9572
CR	-8.886193	167.6666	-0.52999	0.9578
KI	0.000175	0.003458	0.050747	0.9595
MS	135.3867	745.2587	0.181664	0.8559
RD	0.036769	0.325572	0.112935	0.9101

R-sqaured 0.000147	Mean dependent var -397.2010
Adjusted R-squared -0.011736	S.D. dependent var 8042.210
S.E. of regression 8089.264	Akaikr info crit 20.84777
Sum squared resid 3.85E+10	Schwarz criterion 20.90663

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Log likelihood -6215.060	Hannan-Quin crit. 20.87069
Durbin-Watson stat 2.008845	

Following the described model below are the results for Logistics service industry sector considering 50% efficiency of industry, 75% efficiency of industry and 95% efficiency of industry:

- Considering that Logistics service industry is 50% efficient, through EViews statistical program we have obtained following results:

Included observations: 69				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
NCOMP	3.235876	2.579968	1.25431	0.0016
EF	34.22194	8.968699	3.815708	0.0003
REC	2.482116	4.580257	0.541916	0.5898
ADV	-0.003370	0.062715	-0.053741	0.9572
CR	0.865397	0.205135	4.21867	0.0001
KI	-0.178354	0.009857	-18.09481	0.0002
MS	2.725765	0.692798	1.54231	0.2145
RD	-0.370048	0.126474	-2.925875	0.0048

R-sqaured	0.993361	Mean dependent var -9.608696
Adjusted R-squared	0.99718	S.D. dependent var 114.2687
S.E. of regression 9.750817		Akaikr info crit 7.488506
Sum squared resid 5894.863		Schwarz criterion 7.715154
Log likelihood -251.3534		Hannan-Quin crit. 7.578425
Durbin-Watson stat 1.890695		

- Considering that Logistics service industry is 75% efficient, through EViews statistical program we have obtained following results:

Included observations: 69				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
NCOMP	2.772982	2.617618	1.059353	0.2935
EF	29.28805	7.547303	3.879803	0.0003
REC	6.289283	4.809602	1.307651	0.1958
ADV	-0.180987	0.053736	-3.368086	0.0013
CR	0.878552	0.406935	6.21853	0.0023
KI	-0.178024	0.009839	-18.09389	0.0000
MS	2.736570	0.686508	3.986216	0.0002
RD	-0.367272	0.125893	-2.917340	0.0049

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R-sqaured 0.993403	Mean dependent var -9.608696
Adjusted R-squared 0.992765	S.D. dependent var 114.2687
S.E. of regression 9.719558	Akaikr info crit 7.4882084
Sum squared resid 5857.128	Schwarz criterion 7.708732
Log likelihood -251.1319	Hannan-Quin crit. 7.57003
Durbin-Watson stat 1.876835	

- Considering that Logistics service industry is 95% efficient, through EViews statistical program author has obtained following results:

Included observations: 69				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
NCOMP	2.772982	2.617618	1.059353	0.2935
EF	25.93942	6.668215	3.8900009	0.0002
REC	8.521386	5.03827	1.693161	0.0954
ADV	-0.182823	0.053906	-3.391533	0.0012
CR	0.978565	0.689201	6.95113	0.0031
KI	-0.177983	0.009835	-18.09718	0.0000
MS	2.759686	0.682664	4.04524	0.0001
RD	-0.364606	0.125706	-2.900463	0.0051

R-sqaured 0.993403	Mean dependent var -9.608696
Adjusted R-squared 0.992765	S.D. dependent var 114.2687
S.E. of regression 9.719558	Akaikr info crit 7.4882084
Sum squared resid 5857.128	Schwarz criterion 7.708732
Log likelihood -251.1319	Hannan-Quin crit. 7.57003
Durbin-Watson stat 1.876835	

4. Interpretation of results and conclusions

This study carries out different tests explaining the relationship between profitability and market structure of Oil industry and Logistics service industry in Federation of Bosnia and Herzegovina.

Using the information provided by Business Intelligence System (BIS) for the period 2014-2019, the study obtains profitability, concentration and market share values for two sectors of activity, Oil sector and Logistics service sector.

These results are the basis for testing different hypotheses explaining profitability in the generic framework. Thus, the price cost margin of each firm is explained by the concentration of the market in which it operates, by its markets share, by its levels of efficiency as well as a set of control variables (research and development, advertising expenditure, capital intensity, etc.)

The results obtained about the market structure in which the Oil firms operate allow us to conclude that even though values of HHI calculated fit into Medium concentrated type of market, more important observation is the fact that just up to ten firms in the whole industry have percentage of market share above 1%, and one has the largest share in industry of 30-40% market share which is more than double of every other firm in the industry.

So, even if the market ostensibly looks sort-of competitive, the market share of each firm calculated shows us that there is one leading company in the industry over the observed period of time and all other things constant, market share is continuously rising for this particular firm.

The results obtained through comparing profitability of Oil industry sector and Logistics service sector allow us to have a clear image of huge differences in profitability of Oil sector over the Logistics service sector. Also the Oil sector profitability multiplies two times from 2014 until 2018 what we can see from the profitability curve facing upwards. On the other hand, from obtained results we see the decreasing trend in profitability of Logistics service sectors where profitability of industry in 2018 multiple times lower than in 2018.

Based on the data, there is a huge gap between two curves which represent the profitability of Oil sector over the Logistics service sector.

Based on previous data research and observation, we can state that Oil industry in FB&H is surely enjoying the profits above the norm comparing to other industries in country.

Through Unit root test we confirmed that the series are stationary and that other series are stationary. ADF is greater than test value and critical at 1%. So we can continue with the results from the Linear regression model.

 The results obtained through regression model of profitability testing main financial variables, gross profit margins and the market size of the company allow us to conclude:

Oil industry

Testing different levels of efficiency in Oil industry through Simple linear regression model we have obtained similar R squared results being low as 0.1%. Here we can conclude that independent variables do not significantly affect the profitability of Oil industry.

Going through the depended variables we can conclude that there is no significant evidence that independent variables such as R&D expenditure, Capital intensity, conditions of the market and advertising expenditure positively affect the profitability of the Oil industry in Federation of Bosnia and Herzegovina. When included in the same model both concentration and market share, concentration HHI gets, in general inconclusive and non-significant.

On the other hand there is statistically significant evidence that there is positive correlation between the profitability of the industry and the market share in which the firm operates in all years studied (2014-2019) It is important to point out that the market share maintains its sign and its significance. This result shows the importance of market power in explaining profitability. Berger in his study (Berger, 1995), indicate that the coefficient of dependent variable Market share maintains its sign and significance when efficiency is introduced into the regression, suggests that in earlier regressions where this effect is not introduced, the variable MS should not be interpreted as a proxy of efficiency, but as capturing the effect of factors

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other than efficiency. Thus, the results show the inappropriateness of using the market share as a proxy variable for efficiency.

When results like this, we can say that Oil industry comparing to Logistics service industry is annoying the profits above the norm and is competing in Oligopolistic type of market structure.

From the above results the hypothesis of profitability of Oil industry in Federation of Bosnia and Herzegovina is not rejected, since there is a positive relationship between market share and profitability of the industry. Another result is the importance of efficiency and market power being the explanatory variables of profitability, concluding that there is significant evidence that there is positive correlation between the profitability and efficiency of the industry.

Logistics and service industry

Testing different levels of efficiency in Oil industry through Simple linear regression model, we obtained similar R squared results being high as 99%. Here we can conclude that independent variables significantly affect the profitability of Logistics service industry.

From the results obtained in the Logistics service industry we can conclude that there is significant evidence that there is positive relationship between the profitability and the market share of the industry, but it is important to state that there is also significant evidence that there is a positive relationship between the concentration of the industry and the profitability.

There is no significant evidence that there is positive relationship between the variables of R&D expenditure, Advertising expenditure and Capital intensity and the profitability of the Logistics service sector.

From the above results the hypothesis of profitability of Logistics service industry in Federation of Bosnia and Herzegovina is not rejected, since there is a positive relationship between market share and profitability of the industry. Another result is the importance of efficiency and market power being the explanatory variables of profitability, concluding that there is significant evidence that there is positive correlation between the profitability and efficiency of the industry.

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