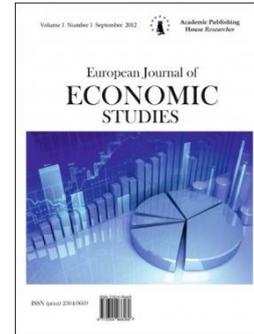


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Published in Slovak Republic
European Journal of Economic Studies
Has been issued since 2012.
E-ISSN: 2305-6282
2020, 9(2): 60-65

DOI: 10.13187/es.2020.2.60
www.ejournal2.com



Women in Top Management and Profitability of SMEs in IT Sector: Evidence from Federation of Bosnia and Herzegovina

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Abstract

This research examines the possible positive relationship between the presence of women in top management teams and the profitability of SMEs in the IT sector in Bosnia and Herzegovina. Data is collected from the TRON Business Intelligent System for the SME's Profitability data and top management structure, covering three years, 2014 to 2019. The total sample, which aims to shed a light on the composition of top management teams, and the potential positive impact of the women's presence on profitability indicators, consists of 635 companies from Bosnia and Herzegovina. The outcome of this research outlined that even in the male-dominated industry, as the IT is, companies led by a woman are profitable, without significant difference from those led by a man. This research also aims to display the current and real gender disbalance in this industry, with the intention to trigger further research and more interest into this issue. The results of this paper contribute to knowledge about workplace diversity and equality in an under-researched country. The results of this study could be used as a guideline for business practices, and in process of top management composition. The results of this research are neither undeniable nor conclusive. Further academic research on link between females and profitability should be taken in different sectors, and/or different business scales, as SMB or large business. The impact of Women's presence on other performance indicators should also be researched.

Keywords: women, top management, profitability, SMEs, tech companies, gender, diversity, ROA, ROE, profit margin.

1. Introduction

This research is the first paper in the literature that provides a comprehensive insight into women's presence in top management teams of small and medium-sized enterprises in B&H, considering specifically and exclusively the information technology sector. The reason for focusing this study only on the tech industry is because the tech industry is one of the rapidly growing, and the outcomes of the research are unpredictable but valuable in future practice. Besides the obstacles and fast-changing environment of the 21st century, the growth of the IT industry is accelerated. The importance of IT is increasing continuously. The presence of women in top management has been reviewed by the reports, supporting the top management evolution of SMEs. The IT industry is dominated by men, while women have greater opportunities to appear in the top management of industries other than those product-oriented and companies other than physical or technical. The reasons for supporting more often female appointments could be divided into two

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groups. In the first place, reasons focused on performance indicators, and second, reasons focused on social arguments. This research is focused on performance indicators, more precisely profitability indicators. These are the main reasons for choosing exactly this industry, firstly to display how big is the gender gap, and to see if the performance of the SMEs differs with the presence of women. Creating an impact is effortlessly possible with more corporate power, which usually comes with a higher position in the management structure. For that reason, TMT positions are considered in the first place.

2. Discussion

Retrospectively females are represented through the lenses of stereotypes, domestication, and under-representation. Considering the literature, not much has changed. In all media platforms, females are typically under-represented which improves man domination (Lakhal Faten et al., 2011). The conclusion of the final gender report is that despite the improvements on a global level, there is still much to be done with the 32 % average proportion of women yet to be narrowed (The Global Gender Gap Report 2018, n.d.). The gender gap exists in many industries, and lack of women on corporate boards and top management positions seem to be a long-standing concern in many countries in Europe (Wahl, 2013). There are several professions where women are under-utilized, even though they have the needed expertise. They might also contribute to all of them, including high-tech and managerial roles where they are under-represented, if the existing obstacles were to be tackled (Global Gender Gap Report 2020, 2020). It is inviolable fact that in the accelerated transition to digital, high globalization, and everyday changes, the gender disparity gap must be closed on a global level (Halilbegovic, Ertem, 2020). Besides the changes in the global economy and overtake of the new technologies, there is no room for gender-based disparities. To utilize the environment changes and to face challenges, society must find a way to include both women and men (Halilbegovic et al, 2017). Despite the high and rising numbers of educated females with higher education degrees that are gaining employment throughout various industries, there are still comparatively limited numbers on company boards and top management roles taken by women (Hanna Rosin, 2012). Profitability is one of the main indicators of company success, and it is the main interest of this research while being linked with women's presence. There are many studies completed with the same interest. Some of them suggest a positive impact of female presence on firm profitability (Kevin Campbell, Antonio Mínguez-Vera, 2008; Perryman et al., 2016), some address unfavorable or no relation between gender balance in TMTs and corporate financial results (Egerová, Nosková, 2019; Kompa, Witkowska, 2018). This study analyzed if SMEs across the Federation of Bosnia and Herzegovina and from IT industry, are more profitable if there is a woman in top management.

3. Methodology

For the overall understanding of the theme background and its realistic global presence, the previous studies were contacted from the different management, business, HR, and human development journals and research websites. The statistical dataset from the UNDP was used to capture different aspects of women's position in B&H and spot the reality by considering the dots in the current time for the specific region.

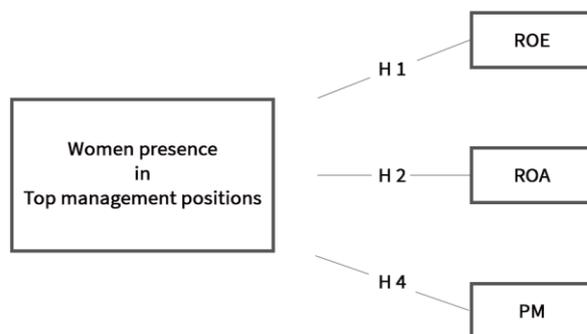


Fig. 1. Proposed research model
Source: Author

Figure 1 represents a conceptual model developed on the foundations of prior research and studies observations. The one-way model analyzes the relationship between Women as an independent variable and profitability as a dependent variable, which is measured through three different financial indicators: return on equity (ROE), return on assets (ROA), and profit margin (PM).

Hypotheses

The central hypothesis of research:

H1: Women in Top Management teams have positive effects on SME's Profitability in the IT sector

Supporting Hypothesis:

H1a: SME's with women in Top Management have higher Return on Equity (ROE)

H1b: SME's with women in Top Management have higher Return on Assets (ROA)

H1c: SME's with women in Top Management have higher Profit Margin (PM)

Data collection

To make clear conclusions and get concrete results, the flow of this research went strict by choosing the specific territory, industry, and size of business.

The data is provided by a secondary source TRON Business Intelligent System. The dataset includes financial information needed to calculate performance indicators of the profitability (ROE, ROA, and PM) within the timeframe of the past 5 years. The information about the Women's presence in TMT was collected from the same source. The pool from which the sample is created contained small and medium-sized enterprises SMEs, specifically from the tech industry. The first version provided data about 635 tech companies, and after reviewing this dataset, 412 companies were included in the analysis. The companies, besides the requirement to belong to the tech industry, require the existence longer than five years, so that the data collected for that period can be complete and useful for understanding the performance of the companies. The data set is secondary, avoiding any influence of respondent obstacles, neither the incomplete data. The source is highly reliable with compatible data to be used in research analysis without trust or credibility issues.

4. Results

Sample

There were 412 companies in the sample, of which 83.7 % are the companies which are led by male, while the remaining 16.3 % are led by women. Based on this, we conclude that men are more represented in the management structures of companies whose data were taken for analysis.

Table 1. Sample characteristics

Gender	n	%
males	345	83.70 %
females	67	16.30 %
Total	412	100.00 %

Source: Author

Data distribution

Before we start with the analysis of the collected data, and on the basis of which we need to give answers to research questions, it was important to consider the form of data distribution, with the aim of selecting an adequate statistical procedure. More specifically, it was necessary to check whether the distribution of the collected data differed from the normal distribution. Although there are several tests to check the distribution of data, we decided to test it by calculating skewness and kurtosis and their standard errors. Depending on the sample size, different minimal values are considered as reference values for deciding whatever distribution is normal or not. In our case, where the sample size is larger than 300, absolute skew value larger than 2 or an absolute kurtosis (proper) larger than 7 should be used as reference values for determining substantial non-

normality. In this case, skewness and/or kurtosis values are usually larger than reference values and therefore we consider the data distribution as non-normal, which means that for the inferential statistical test we should use non-parametric procedures.

ROE

H1a: SME's with women in Top Management have higher Return on Equity (ROE)

Before we answer the research question, we consider important to present some basic descriptive statistic on ROE for all companies we took in sample. In period of 2014-2018, the companies in average had 0,5063 of ROE with standard deviation of 5,979. The high standard deviation indicates large differences between companies. The average ROE varies from -59.1 to 81.8. 25 % of companies have the ROE lower than or equal to 0.18, while half of the companies have an ROE equal to or lower than 0.527. Also, 25 % of companies have an average ROE equal to or larger than 0.86. However, such information still cannot answer on our research question. So, we performed non-parametric inferential test, and the result of the test is shown on the table below. More concretely, we performed Mann-Whitney U test and Wilcoxon W test. In a case of average ROE (2014–2018) the Mean Rank for the companies led by males are a bit higher than ROE of companies led by females. Although, the Mean Rank differ, it still does not mean that the average ROE differs significantly between the companies led by male and companies led by female. In each case we did not find any statically significant difference in average ROE, and therefore we conclude that SME's with women in Top Management do not have higher Return on Equity (ROE). So, our hypothesis is rejected.

Table 2. ROE Outcome

Test Statistics ^a						
	average ROE (2014–2018)	ROE 2018	ROE 2017	ROE 2016	ROE 2015	ROE 2014
Mann-Whitney U	8178	7538	5946	4709	4108	2864
Wilcoxon W	10131	9368	7542	5934	5189	3530
Z	-1.99	-1.952	-1.342	-0.728	-0.251	-0.498
Asymp. Sig. (2-tailed)	0.051	0.051	0.18	0.466	0.801	0.619
a. Grouping Variable: gender						

Source: Author

ROA

H1b: SME's with women in Top Management have higher Return on Assets (ROA)

In period of 2014–2018, the companies in average had 0,2181 of ROE with standard deviation of 0,218. The high standard deviation indicates large differences between companies. The average ROA varies from -2,28 to 14,55. 25 % of companies have the ROA lower than or equal to 0.0098, while half of the companies have an ROA equal to or lower than 0.169. Also, 25 % of companies have an average ROA equal to or larger than 0.439. In a case of average ROA (2014–2018) the Mean Rank for the companies led by males are a bit higher than ROA of companies led by females. Although, the Mean Rank differ that does not mean that the average ROA differ significantly between the companies led by male and companies led by female. In each case there is no any statically significant difference in average ROA, and therefore we conclude that SME's with women in Top Management do not have higher Return on Assets (ROA). So, our hypothesis is rejected.

Table 3. ROA Outcome

Test Statistics ^a						
	average ROA (2014–2018)	ROA 2018	ROA 2017	ROA 2016	ROA 2015	ROA 2014
Mann-Whitney U	10310	10263	7468	5503	4549.5	3470
Wilcoxon W	12588	12541	9359	7099	5875.5	4416
Z	-1.331	-1.384	-1.3	-1.732	-1.288	-1.447
Asymp. Sig. (2-tailed)	0.183	0.166	0.194	0.083	0.198	0.148
a. Grouping Variable: gender						

Source: Author

PM

H1b: SME's with women in Top Management have higher Profit Margin (PM)

In period of 2014–2018, the companies in average had -0,135 of PM with standard deviation of 1,51. The high standard deviation indicates large differences between companies. The average PM varies from -15,94 to 1,65. 25% of companies have the PM lower than or equal to 0.0131, while half of the companies have an PM equal to or lower than 0.1005. Also, 25 % of companies have an average PM equal to or larger than 0.251. In a case of average PM (2014-2018) the Mean Rank for the companies led by males are a bit higher than PM of companies led by females. Although, the Mean Rank differ that does not mean that the average PM differ significantly between the companies led by male and companies led by female. In each case there is no any statically significant difference in average PM, and therefore we conclude that SME's with women in Top Management do not have higher Profit Margin (PM). So, our hypothesis is rejected.

Table 4. PM Outcome

Test Statistics ^a						
	average PM (2014-2018)	PM 2018	PM 2017	PM 2016	PM 2015	PM 2014
Mann-Whitney U	9957	8539.5	6549	5363	4253	3345
Wilcoxon W	12168	10492.5	8260	6741	5579	4206
Z	-0.991	-1.562	-1.318	-0.748	-1.688	-0.984
Asymp. Sig. (2-tailed)	0.322	0.118	0.188	0.455	0.092	0.325
a. Grouping Variable: gender						

Source: Author

4. Conclusion

This article outlined the low involvement of women in TMTs of small and medium-sized companies in the IT sector across the Federation of Bosnia and Herzegovina, aiming to disrupt the usual business mindset. It is unnecessary to think of different approaches to manipulate social and political opinions. The outcome of this research outlined that even in the male-dominated industry,

as the IT, companies led by a woman are profitable without significant difference from those led by a man. Which, at the same time, shows the complexity of this issue and how outreach of one person, one company, or public authorities that could borne fruit is valuable. The factors for the under-representation of women are defined as processes at the individual, organizational, and societal levels. Female's under-representation in new jobs is the biggest barrier to closing the economic gender disparity.

In future research, the link between women's presence in leadership positions and performance indicators of companies should be analyzed from different aspects and on different levels. A different aspect that could impact this relationship should be taken into future analyses. Some of these could be the age of the company, experience of women or man that is managing the company, the proportion of females in the whole top management team, etc. When it comes to the size of business and industry, the same link could be analyzed in different dimensions.

The outcome of this study displayed that women are capable of top management positions, even in a male-dominated industry. Regarding the results of this study, more chances should be given to women when appointing to the top management positions.

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