ANALYSIS OF THE RELATIONSHIP BETWEEN BODY MASS INDEX (BMI) AND EMPLOYEE ENGAGEMENT

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Abstract: This paper examines the relationship between the BMI (Body Mass Index) and employee engagement to the occasional sample of 849 respondents who are employed in the public and non-public sector in Slovenia. The main goal of the research is to determine whether (and how) the impact the BMI on the employee engagement. A written survey was conducted from 1 January 2013 to 15 March 2013. For a statistical analysis, we used IBM SPSS 20 and multivariate analysis (multiple regressions). Based on the linear regression F (1, 832) =0. 038, p-value = 0.846, R-square = 0.000) we found out that there isn't a statistically significant at 5% significance level relationship between BMI and an employee engagement. We also found out that there isn't statistically significantly different between employee engagement and BMI.

Keywords: employee, engagement, BMI (Body Mass Index)

1. Introduction

For successful work in a company it is necessary to respect and educate employees who must participate in the running of the company and at the same time they have to be motivated because only motivated, informed, satisfied and engaged employees create the competitive advantage of a modern enterprise. In company every individual is accountable for his or her own engagement; anyone with direct reports must coach team members to higher levels of engagement and manage his or her own engagement; and executives set the tone for high morale and motivation plus shoulder the responsibilities of individuals and managers.

The purpose of this paper is to investigate whether and how one variable (BMI) influence the dependent variable under study defined as Y-a (engagement of employees). The aim of the study is to contribute the understanding of how one independent variable

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(X_1- a Dummy variable for BMI; X_1= 0 for normal weight (healthy weight, BMI= from 18.5 to 24.9, (see Table 1); X_1= 1 otherwise) impact the Y variable based on linear regression models. This is a completely new research into the impact of the BMI and the engagement at his work.

The main research hypothesis is that the independent variable (X_1,) is statistically significant for explanation of variation in variable (Y- engagement of employees).

The additional research hypothesis states that there is a statistically significant difference in the employee engagement between employees with different BMI.

The following programs were used for the analysis: IBM SPSS 20 and Excel. We will use the ANOVA test and linear regression model. Research data has been acquired through the use of a questionnaire.

2. Employee Engagement

Employee engagement is above all average willingness to engage the energy and commitment of all employees in everything they do in order to achieve outstanding results (http://www.dialogos.si/slo/objave/clanki/zavzetost/).

Employee engagement is employees' ability and willingness to contribute to organizational success, especially their willingness to give "discretionary effort," going beyond what is typically required in their position to make the organization successful.

Figure 1: Engage Workforce

Source: http://www.talentkeepers.com/engagement.jsp

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The model below highlights the elements of developing and maintaining an engaged workforce. Employee Engagement is an essential element of organizational health and is the goal of strategic initiatives designed to improve employee attitudes and retention through leadership, co-workers, job/career satisfaction, and a high performing organization. Increase your impact and energize your engagement and retention efforts. Our knowledge, solutions, capability and experienced team makes TalentKeepers your best partner (Figure 1).

Kahn (1990, p. 694) was the first scholar to define "personal engagement" as the "harnessing of organization member's selves to their work roles: in engagement, people employ and express themselves physically, cognitively, emotionally and mentally during role performances".

Employee engagement, also called worker engagement, is a business management concept. "Employee engagement is a measurable degree of an employee's positive or negative emotional attachment to their job, colleagues and organization that profoundly influence their willingness to learn and perform is at work".. Work engagement has been defined as "a positive, fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2006, p. 702). Employee engagement is a distinct and unique construct that consists of cognitive, emotional, and behavioral components that are associated with individual role performance (Saks, 2006). Work engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli et al., 2002). Maslach et al. (2001) noted that engagement is characterized by energy, involvement, and efficacy—the direct opposites of the three burnout dimensions, exhaustion, cynicism and ineffectiveness.

Employee engagement is a workplace approach designed to ensure that employees are committed to their organization's goals and values, motivated to contribute to organizational success, and are able at the same time to enhance their own sense of well-being. There are differences between attitude, behaviour and outcomes in terms of engagement. An employee might feel pride and loyalty (attitude); be a great advocate of their company to clients, or go the extra mile to finish a piece of work (behaviour). Outcomes may include lower accident rates, higher productivity, fewer conflicts, more innovation, lower numbers leaving and reduced sickness rates. But we believe all three – attitudes, behaviours and outcomes – are part of the engagement story. There is a virtuous circle when the pre-conditions of engagement are met when these three aspects of engagement trigger and reinforce one another.Engaged organizations have strong and authentic values, with clear evidence of trust and fairness based on mutual respect, where two ways promises and commitments – between employers and staff – are understood, and are fulfilled (http://www.engageforsuccess.org/about/what-is-employee-engagement/).

Vorina (2013) study shows that the engagement of employees would increase if the satisfaction with life increase. Vorina, David, Vrabič-Vukotić (2013) study shows that if the development of ICT skills increase than also increase the employee engagement.

3. Methodology

Sample. For this research we selected population - residents / in a statistical region Savinjska in Slovenia. The investigated unit were people over 15 years old employed in the enterprise or an institution. The sampling frame consisted of residents / s from different places and towns in statistical region Savinjska. The sample consists of 849 respondents. The study included 403 (47.5%) men, 441 women (51.9%) and 5 respondents (0.6%) who did not answer the questions. There were 56 people (6.6%) with completed primary school level of education or less, 143 people (16.8%) with completed vocational school level of education, 301 respondents (35.5%) secondary school level of education, 159 (18.7%) of respondents who completed college, 139 (16.4%) of respondents who finished university, the number or percentage of respondents with master's degree or doctor's degree is 22 (2.6%). There were 29 people (3.4%) who did not define their level of education. The average age of respondents is 39.01 years, standard deviation is 10.22 years. The average tall is 172.70 cm, standard deviation is 10.12 cm.

Accessories-description questionnaire. The questionnaire consists of twenty-one closed-ended questions, three questions relate to demographic data (gender, age and tall) of respondents. The questionnaire was compiled ourself but the part of the questionnaire for measure employee engagement used by the Gallupov Institute (Q12® Meta-Analysis. The Relationship between Engagement at Work and Organizational Outcomes, http://www.gallup.com/strategicconsulting/126806/Q12-Meta-Analysis.aspx).

Employee engagement was measured using 5 degrees Likert's scale (1-strongly disagree, 2-partially disagree, 3-just yes not, 4-mostly disagree and 5 completely agree) with 12 factors which are: I know what is expected of me at work; I have the materials and equipment I need to do my work right; At work, I have the opportunity to do what I do best every day; In the last seven days, I have received recognition or praise for doing good work; My supervisor, or some one at work, seems to care about me as a person; There is someone at work who encourages my development; At work, my opinions seem to count; The mission or purpose of my company makes me feel my job is important; My associates or fellow employees are committed to doing quality work; I have a best friend at work; In the last six months, someone at work has talked to me about my progress; This last year, I have had opportunities at work to learn and grow.

Table 1. BMI range

Category	BMI range – kg/m^2
Low	less then 18.5
Normal	from 18.5 to 24.9
Obese (Level 1)	from 25.0 to 29.9
Obese (Level 2)	from 30.0 to 34.9
Obese (Level 3)	from 35.0 to 39.9
Obese (Level 4)	40.0 and above

Source: http://www.smsdieta.si/indeks-telesne-mase/

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BMI is defined as the individual's body mass divided by the square of their height - with the value universally being given in units of kg/m^2. We used the following (Table 1) category of obesity (http://www.smsdieta.si/indeks-telesne-mase/).

Working methods and procedures of measurement. Interviews (face to face) were carried out from 1 January 2013 to 15 March 2013. We interviewed friends and acquaintances. Solving questionnaire took about 10 minutes. We distributed 880 surveys but only 849 were analysed. 31 surveys were highly incomplete (more than half of the responses in the questions were missing), so we excluded them from the further statistical analysis.

Used methods, data processing. The collected data were analyzed using IBM SPSS, version 20. We have also used the Microsoft tools Word and Excel. Regarding the purpose and objectives of the research we used ANOVA test and linear regression.

Verification of the adequacy of the measurement instrument. For the measuring employee engagement we used the Gallup's questionnaire.

Table 2. Case Processing engagement

	N	%
Valid	826	97.3
Cases excluded	23	2.7
Total	849	100.0

Source: SPSS 20, Author's creation

Table 3. Reliability Statistics, engagement

Cronbach's Alpha	N of items
0.875	12

Source: SPSS 20, Author's creation

We calculated that Cronbach's alpha is equal 0.875 (Tables 2 and 3), which means a lot or exemplary reliability of measurement.

4. Findings of the Research - Test Hypotheses

The first hypothesis was tested with a model of linear regression. In the Model we chose independent variables X_1- a Dummy variable for BMI; $X_1= 0$ for normal weight (healthy weight, BMI= from 18.5 to 24.9 (see Table 1); $X_1= 1$ otherwise). The dependent variable (Y-employee engagement) was measured as the sum of 12 factors by Gallup.

The linear regression model (1) with estimated parameters is:

$$(\hat{Y} = 39.11 - 0.155 X_1) \tag{1}$$

n = 449, R-squared = 0.000, Adjusted R-squares = -0.001, Standard Error = 9.24. In model (Table 4, 5, 6) 0.00 % of total sum of squares are explained by the estimated model.

Variables X_1 (p-value = 0.000) is not statistically significant. The first hypothesis is rejected.

Table 4. Regression Model: K=1, n=449

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.007	0.000	-0.001	9.242	1.743

Source: SPSS 20, Author's creation

Table 5. Regression Model: F-test

Model	Sum of Squares	df	F	Sig.
Regres.	3.233	1	0.038	0.846
Resid.	70986.532	831		
Total	70989.765	832		

Source: SPSS 20, Author's creation

Table 6. Regression Model : K=1, n=449

	Coeff.	Standard Error	t - Stat	P-value
Inter.	39.107	0.713	54.83	0.000
X_1	-0.155	0.798	0.195	0.846

Source: Megastat, Gretl, Author's creation

The second hypothesis states there is a statistically significant difference in the employee engagement between employees with different BMI. The hypothesis was checked by ANOVA test.

Table 7. Test ANOVA - Employee engagement and BMI category

	Sum of Squares	df	Mean Square	F	P-value
Between Groups	335.587	5	67.117	0.862	0.506
Within Groups	34484.779	443	77.844		
Total	34820.365	448			

Source: IBM SPSS 20, Excel, Author's creation

In the Table 7 we can see (F (5, 448) = 0.862, p-value = 0.506), that there is no statistically significant difference between the BMI category and different employee engagement. Therefore the hypothesis is rejected.

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Table 8. Employee engagement and BMI category

BMI Category	Mean (M)	N	Std. Deviation
less then 18.5	37,91	47	9,191
from 18.5 to 24.9	39,11	168	8,442
from 25 to 29.9	38,42	123	8,563
from 30 to 34.9	38,04	70	8,860
from 35 to 39.9	35,44	25	10,029
40 and above	37,50	16	11,314
Total	38,37	449	8,816

Source: IBM SPSS 20, Excel, Author's creation

The most engaged employees (M = 39.11, SD = 8.44) are the employees with normal BMI (from 18.5 to 24.9), the least engaged employees are employees with the highest BMI (above 35) (Table 8).

5. Conclusion

In this paper we presented a completely new field of research, we investigated the relationship between BMI (X_1- a Dummy variable for BMI; X_1= 0 for normal weight (healthy weight, BMI= from 18.5 to 24.9, (see Table 1); X_1= 1 otherwise) and the dependent variable Y – employee engagement. In model we included a new independent variable X1- BMI. All data are based on the author's research.

In our research, we don't find that there is a relationship between employee engagement and BMI.

Linear regression model, with n=449 and K=1 regressor, indicated that variables X1 isn't statistically significant at 5 % significance level.

The F-test with F-statistics $F_{(1, 832)}$ =0.038, p-value = 0.846, R-square = 0.000 shows that the overall regression isn't statistically significant at 5 % significance level.

We found out, based on descriptive analysis (mean-average), that the employees with normal BMI are more engaged at work than the others.

In further research it would be interesting to perform the analysis with larger sample and also in different countries.

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