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Obesity Perception from Demographic Variables

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Abstract

Nowadays, obesity is a worldwide public health problem, it is considered one of the main causes of death. This research analyzed the perception of the body image and other demographic characteristics of the employees who work in the automotive industry of Ciudad Juárez. The study was of a quantitative, non-experimental, transverse and descriptive design, it was applied an instrument that values body image from 9 images. The study sample was made up of 300 subjects. Analysis of variance was performed, considering age, weight, education, seniority and position in the organization as variables. The results revealed significant differences from the variables of age, weight and seniority, in other words, thesevariables are related with perceived body image. As a conclusion, is important that organizations make efforts related to the health of their employees, taking care of their health before they suffer obesity problems, since a healthy worker will be more productive.

Keywords: Obesity, perception, body image, seniority, position in the organization

1. Introduction

At the present time, faced with the demands of a competitive world, organizations seek to achieve competitive advantages that differentiate them from opposition, whereby the need to understand that success and performance depends largely on human capital(Cárdenas, Díaz, Macías, & Esparza, 2016). Self-care at workplace has been one of the objectives of employers, workers and professionals, who are in charge of health and safety management at work (Hernández, 2015). According to information from World Health Organization [WHO], obesity is a public health problem that afflicts all countries, it points out that this disease is taking more lives, each year at least 2.8 million people die worldwide due to obesity or overweight; since 1980 to date, obesity rates have drastically duplicated(Organizacion Mundial de la Salud, 2016).

In Mexico, obesity is in constant growth and is thought to continue increasing (Sánchez-Castillo, Pichardo-Ontiveros, & López, 2004). According to data from National Health and Nutrition Survey [ENSANUT 2016], overweight and obesity had an increase of 1.3% respect to data from 2012, for people over 20 years of age; in 2012, 7 out of 10 adults were overweight, and half of those were obese, resulting in chronic diseases such as diabetes, hypertension among others, therefore these diseases increase public health outgoings (Gutiérrez et al., 2012; Levy, Nasu, Dommarco, & Ávila, 2016).

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With respect to Chihuahua State, Health Secretary, in its Health Sectorial Program 2011-2016, shows that the main cause of death in the State is due to cardiovascular diseases. This is due to metabolic problems, obesity, chronic degenerative diseases, among others (Salud, 2011-2016). Obesity is considered as an abnormal accumulation of fat in the body, is a chronic disease that is harmful to health (Barrera-Cruz, Rodríguez-González, & Molina-Ayala, 2013; Organizacion Mundial de la Salud, 2016). It should be mentioned that the situation of each person varies, depending on the accumulated fat (Díaz-Villaseñor & País, 2011). This disease does not distinguish between social class or economic level; but unfortunately,people most affected are the ones who have less knowledge about this prevalence, which considerably affects people´s health and even causes death (Pérez, Olivares, Palma, Duarte, & Quijada, 2016).

Overweight and obesity are risk factors for various chronic diseases, such as diabetes, cardiovascular diseases, musculoskeletal disorders and cancer, this type of illness are harmful and aggravate people´s health (Catenacci, Hill, & Wyatt, 2009; Organizacion Mundial de la Salud, 2016). In job context, employees suffering from this condition have symptoms such as absenteeism, poor performance and low productivity(Dávila-Torres, González-Izquierdo, & Barrera-Cruz, 2015; De Gonzalez, 2011).Therefore, companies face great challenges, in order to change lifestyle, eating behavior and health care of employees, for their own benefit and thereby reduce chronic illness and possible fatalities, it is recommended that experts provide enough information and indicated advices (Garcia-Garcia et al., 2008; Ratner, Sabal, Hernández, Romero, & Atalah, 2008; Velasco-Lavín, 2016).

There is a need to promote activities that contribute to physical activation, in addition to establishing appropriate and efficient strategies of great impact in the different organization levels,in order to prevent or care obesity(Álvarez Gasca, Hernández Pozo, Jiménez Martínez, & Durán Díaz, 2014; Barrera-Cruz et al., 2013; Palmeros Exsome, Hurtado Capetillo, & Torres Flores, 2016; Zamudio-Solorio & Muñoz-Arenillas, 2016). Companies should understand that having healthy employees, the chances of absenteeism, incidents and accidents, will be minimal; as well as helping them to achieve competitive advantages(Ratner et al., 2008).

According to the study developed by Zumbardo, Escobedo and Jorge (2016), they report that there is a prevalence of overweight and obesity among workers responsible for health, considering the importance of raising awareness of eating habits and physical activity, since they are the promotors of healthy lifestyle and are usually an example to follow by patients. This research analyzes whether perceived obesity is different according to age, weight, education, seniority, and organizational position of middle management employees working in the manufacturing industry on the Northern border of Chihuahua. The document is organized in four parts. The first one, contains a literature review of perceived obesity. In the second part, methodology is explained. The third section, analysis of data is shown according to the analysis of variance tests. Finally, conclusions of the research are presented.

2. Materials and Methods

The design of this research is quantitative, non-experimental, transversal and descriptive type. The sample was non-probabilistic, considering as study subjects the employees who work as middle managers in the exporting manufacturing industry, specifically in the automotive sector, on the Northern border of Chihuahua. A questionnaire was applied as a data collection technique, which was administered to each of the participants in their work climate. There were applied 300 questionnaires, of which 100% were usable. Body image was measure through 9 iconographies, shown in Figure 1, proposed by Madrigal et al. (2000) where: 1 corresponded to low weight; from 2 to 5, normal weight; from 6 to 7, overweight; and from 8 to 9, represented obesity. Age, weight, position, seniority, and education were integrated as demographic data. Descriptive and inferential statistics were analyzed using the SPSS® version 21 software.

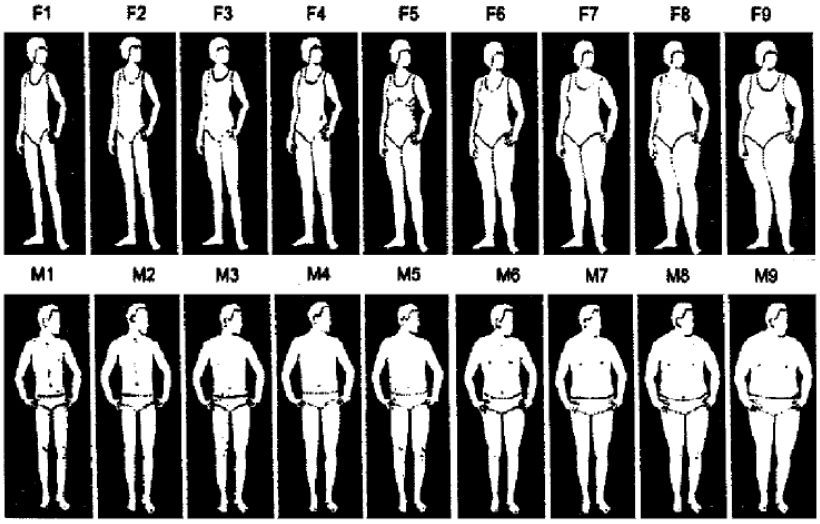

Figure 1. Iconography for Body Image

Source: Madrigal, H., Sanchez-Villegas, A., Martinez-Gonzalez, M., Kearney, J., Gibney, M., De Irala, J., & Martinez, J (2002).

General hypothesis for this research was formulated as shown below:

H_0: There are no significant differences in the perception of body image according to age, weight, education, and position in the organization.

Fort the purpose of analysis, the following hypothesis is also proposed:

H_0a: Body image is not different depending on age

H_0b: Body image is not different in relation to the workers weight.

H_0c: Body image does not differ according to employee´s education.

H_0d: Body image is not different depending on the subjects´ age.

H_0e: Body image is not different depending on the position occupied by the employee.

3. Results and Discussion

Demographic data are presented below. As shown in Table 1, almost 64% of the participants are men, 70% are between 20 and 39 years old, 85% have a completed professional career, and about 88% of subjects have finished professional career. On the other hand, with respect to the job profile, data expose that 53.4% work in the engineering and administration departments, while most of the study subjects occupy the position of engineers with almost 55%. With respect to the organizations profile, 100% of the participants work in automotive industry.

Table 1. Study subjects and job profile n=300

Characteristics	Number of subjects	%	Characteristics	Number of subjects	%
Gender					
Male	192	63.6			
Female	109	36.4			
Age			**Departament**		
Less than 20 years	0	0.0	Engineer	113	37.7
Between 20 - 29 years	119	39.7	Administrative	47	15.7
Between 30 - 39 years	91	30.3	Quality	40	13.3
Between 40 - 49 years	60	20.0	Production	35	11.7
Between 50 - 59 years	28	9.34	Materials	33	11.0
More than 60 years	2	0.66	Mantenance	19	6.3
Seniority			Others	13	4.3
Menos de un año	35	11.7			
Entre 1 y 3 años	122	40.7			
Entre 4 y 7 años	73	24.3			
Más de 8 años	70	23.3			
Education			**Position**		
Highschool completed	9	3.0	Manager	21	7.0
Unfinished Profesional career	36	12.0	Supervisor	91	30.3
Profesional career	197	65.7	Engineer	164	54.7
Master degree	58	19.3	Other	24	8.0

Source: Own elaboration from data collected

3.1 Analysis of Variance

A one-way analysis of variance [ANOVA] was performed. Results showed that there are no significant differences in body image, based on position or education. On the other hand, significant differences were found between the groups according to age, weight and seniority. According to the variable age [classified in six groups: 1= less than 20, 2= between 20 and 29 years, 3= between 30 and 39 years, 4= between 40 and 49 years, 5= between 50 and 59 years, 6= more than 60 years].Table 2, shows the results for the analysis of variance, which reveal statistically significant differences from age (p= 0.006), it means that the results obtained in relation to the body image depend on the age of the employee.

Table 2.ANOVA test for perception of body image according to age.

Age	Sum of Squares	df	Mean Square	F	Sig.
	43.015	4	10.754	3.689	.006
	859.931	296	2.915		
	902.947	300			

Source: Own elaboration from data collected.

Table 3 shows the results of the Tukey test for the perception of body image respect to age groups. It can be observed that there are no significant differences between groups [2 and 3, 2 and 5, 2 and 6], [3 and 4, 3 and 5, 3 and 6], [4 and 5, 4 and 6] between 5 and 6. There is only a significant difference between groups 2 and 4, which indicates that workers between 20 and 29 years old, and between 40 and 49 years old, are the only ones that show differences in the perception of body image.

Table 3. Tukey test for the perception of body image according to age.

Age	Age	Mean Difference	Std. Error	Sig.	95% Confidence Level	
					Lower Bound	Upper Bound
2	3	-.586	.238	.101	-1.24	.07
	4	-.983*	.270	.003	-1.72	-.24*
	5	-.559	.359	.525	-1.54	.43
	6	-.416	1.217	.997	-3.76	2.93
3	2	.586	.238	.101	-.07	1.24
	4	-.396	.284	.631	-1.18	.38
	5	.027	.369	1.000	-.99	1.04
	6	.170	1.220	1.000	-3.18	3.52
4	2	.983*	.270	.003	.24	1.72*
	3	.396	.284	.631	-.38	1.18
	5	.424	.391	.814	-.65	1.50
	6	.567	1.227	.991	-2.80	3.94
5	2	.559	.359	.525	-.43	1.54
	3	-.027	.369	1.000	-1.04	.99
	4	-.424	.391	.814	-1.50	.65
	6	.143	1.250	1.000	-3.29	3.57
6	2	.416	1.217	.997	-2.93	3.76
	3	-.170	1.220	1.000	-3.52	3.18
	4	-.567	1.227	.991	-3.94	2.80
	5	-.143	1.250	1.000	-3.57	3.29

Source: Own elaboration from data collected.

Regarding to weight [classified in 12 groups: 1= less than 50 kg, 2= between 51 and 55 kg, 3= between 56 and 60 kg, 4= between 61 and 65 kg, 5= between 66 and 70 kg, 6= between 71 and 75 kg, 7= between 76 and 80 kg, 8= between 81 and 85 kg, 9= 86 and 90 kg, 10= between 91 and 95 kg, 11= between 96 and 100 kg, 12= over 100 kg], the ANOVA test, showed in Table 4,revealed statistically significant differences (p= 0.000). This means that there is enough evidence to reject the null hypothesis, concluding that the perception of body image depends on the weight of the subjects.

Table 4. ANOVA test between groups according to weight.

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Weight	Sum of Squares	df	Mean Square	F	Sig.
	314.988	11	28.635	14.026	.000
	587.959	289	2.042		
	902.947	300			

Source: Own elaboration from data collected.

Table 5 shows the results of Tukey test respect to the weight groups. It can be observed that there are no statistically significant differences between the gruups[1- 2, 1 - 3], [2 - 3, 2 - 4, 2 - 5], [3 - 4, 3 - 5, 3 - 6, 3 - 7, 3 - 8, 3 - 9, 3 - 10], [4 - 5, 4 - 6, 4 - 7, 4 - 9, 4 - 10], [5 - 6, 5 - 7,5 - 9, 5 - 10], [6 - 7, 6 - 9, 6 - 10], [7 - 8, 7 -9, 7 - 10], [8 - 9, 8 - 10, 8 - 11], [9 - 10], [10 - 11], as well as in [11 – 12]. In contrast, the groups in which evidence of significant differences were found were[1 with4,5,6,7,8,9,10,11 and 12], [2 with 6,7,8,9,10,11 and 12], [3 with 11 y 12], [4 with 8,11 y 12], [5 with11 y 12], [6 with 8,11 y 12], [7 with 11 y 12], [8 with 12], [9 with 11 y 12], and 10 with 12. Preview information indicates that the perception of body image, depends on the age group to which the participants of the sample belong.

Table 5. Tukey test for the perception of body image according to weight.

Weight	Weight	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-1.050	.845	.985	-3.84	1.74
	3	-2.750*	.834	.050	-5.50	.00
	4	-2.571*	.764	.040	-5.09	-.05
	5	-2.620*	.745	.025	-5.07	-.17
	6	-2.878*	.744	.007	-5.33	-.43
	7	-3.311*	.739	.001	-5.75	-.88
	8	-4.052*	.747	.000	-6.51	-1.59
	9	-3.750*	.779	.000	-6.32	-1.18
	10	-3.750*	.825	.000	-6.47	-1.03
	11	-5.650*	.845	.000	-8.44	-2.86
	12	-6.114*	.834	.000	-8.86	-3.36
2	1	1.050	.845	.985	-1.74	3.84
	3	-1.700	.624	.220	-3.76	.36
	4	-1.521	.526	.150	-3.26	.21
	5	-1.570	.499	.076	-3.21	.07
	6	-1.828*	.498	.015	-3.47	-.19
	7	-2.261*	.490	.000	-3.88	-.65
	8	-3.002*	.502	.000	-4.66	-1.35
	9	-2.700*	.549	.000	-4.51	-.89
	10	-2.700*	.612	.001	-4.72	-.68
	11	-4.600*	.639	.000	-6.71	-2.49
	12	-5.064*	.624	.000	-7.12	-3.01
3	1	2.750*	.834	.050	.00	5.50
	2	1.700	.624	.220	-.36	3.76
	4	.179	.508	1.000	-1.50	1.85
	5	.130	.480	1.000	-1.45	1.71
	6	-.128	.479	1.000	-1.70	1.45
	7	-.561	.471	.989	-2.11	.99
	8	-1.302	.483	.233	-2.89	.29
	9	-1.000	.532	.770	-2.75	.75
	10	-1.000	.596	.877	-2.97	.97
	11	-2.900*	.624	.000	-4.96	-.84
	12	-3.364*	.609	.000	-5.37	-1.36
4	1	2.571*	.764	.040	.05	5.09
	2	1.521	.526	.150	-.21	3.26
	3	-.179	.508	1.000	-1.85	1.50
	5	-.048	.342	1.000	-1.18	1.08
	6	-.306	.341	.999	-1.43	.82
	7	-.740	.330	.519	-1.83	.35
	8	-1.481*	.347	.002	-2.62	-.34
	9	-1.179	.412	.162	-2.54	.18
	10	-1.179	.493	.416	-2.80	.45
	11	-3.079*	.526	.000	-4.81	-1.34
	12	-3.542*	.508	.000	-5.22	-1.87
5	1	2.620*	.745	.025	.17	5.07
	2	1.570	.499	.076	-.07	3.21
	3	-.130	.480	1.000	-1.71	1.45
	4	.048	.342	1.000	-1.08	1.18
	6	-.258	.296	.999	-1.23	.72
	7	-.692	.283	.381	-1.63	.24
	8	-1.433*	.303	.000	-2.43	-.43
	9	-1.130	.376	.113	-2.37	.11
	10	-1.130	.463	.382	-2.66	.40
	11	-3.030*	.499	.000	-4.67	-1.39
	12	-3.494*	.480	.000	-5.07	-1.91

6	1	2.878*	.744	.007	.43	5.33
	2	1.828*	.498	.015	.19	3.47
	3	.128	.479	1.000	-1.45	1.70
	4	.306	.341	.999	-.82	1.43
	5	.258	.296	.999	-.72	1.23
	7	-.434	.282	.928	-1.36	.49
	8	-1.175*	.302	.007	-2.17	-.18
	9	-.872	.375	.461	-2.11	.36
	10	-.872	.462	.766	-2.40	.65
	11	-2.772*	.498	.000	-4.41	-1.13
	12	-3.236*	.479	.000	-4.81	-1.66
7	1	3.311*	.739	.001	.88	5.75
	2	2.261*	.490	.000	.65	3.88
	3	.561	.471	.989	-.99	2.11
	4	.740	.330	.519	-.35	1.83
	5	.692	.283	.381	-.24	1.63
	6	.434	.282	.928	-.49	1.36
	8	-.741	.289	.303	-1.69	.21
	9	-.439	.365	.988	-1.64	.76
	10	-.439	.454	.998	-1.93	1.06
	11	-2.339*	.490	.000	-3.95	-.72
	12	-2.802*	.471	.000	-4.35	-1.25
8	1	4.052*	.747	.000	1.59	6.51
	2	3.002*	.502	.000	1.35	4.66
	3	1.302	.483	.233	-.29	2.89
	4	1.481*	.347	.002	.34	2.62
	5	1.433*	.303	.000	.43	2.43
	6	1.175*	.302	.007	.18	2.17
	7	.741	.289	.303	-.21	1.69
	9	.302	.380	1.000	-.95	1.56
	10	.302	.466	1.000	-1.23	1.84
	11	-1.598	.502	.069	-3.25	.06
	12	-2.061*	.483	.002	-3.65	-.47
9	1	3.750*	.779	.000	1.18	6.32
	2	2.700*	.549	.000	.89	4.51
	3	1.000	.532	.770	-.75	2.75
	4	1.179	.412	.162	-.18	2.54
	5	1.130	.376	.113	-.11	2.37
	6	.872	.375	.461	-.36	2.11
	7	.439	.365	.988	-.76	1.64
	8	-.302	.380	1.000	-1.56	.95
	10	.000	.517	1.000	-1.70	1.70
	11	-1.900*	.549	.030	-3.71	-.09
	12	-2.364*	.532	.001	-4.12	-.61
10	1	3.750*	.825	.000	1.03	6.47
	2	2.700*	.612	.001	.68	4.72
	3	1.000	.596	.877	-.97	2.97
	4	1.179	.493	.416	-.45	2.80
	5	1.130	.463	.382	-.40	2.66
	6	.872	.462	.766	-.65	2.40
	7	.439	.454	.998	-1.06	1.93
	8	-.302	.466	1.000	-1.84	1.23
	9	.000	.517	1.000	-1.70	1.70
	11	-1.900	.612	.086	-3.92	.12
	12	-2.364*	.596	.005	-4.33	-.40
11	1	5.650*	.845	.000	2.86	8.44
	2	4.600*	.639	.000	2.49	6.71
	3	2.900*	.624	.000	.84	4.96
	4	3.079*	.526	.000	1.34	4.81
	5	3.030*	.499	.000	1.39	4.67
	6	2.772*	.498	.000	1.13	4.41
	7	2.339*	.490	.000	.72	3.95

	8	1.598	.502	.069	-.06	3.25
	9	1.900*	.549	.030	.09	3.71
	10	1.900	.612	.086	-.12	3.92
	12	-.464	.624	1.000	-2.52	1.59
12	1	6.114*	.834	.000	3.36	8.86
	2	5.064*	.624	.000	3.01	7.12
	3	3.364*	.609	.000	1.36	5.37
	4	3.542*	.508	.000	1.87	5.22
	5	3.494*	.480	.000	1.91	5.07
	6	3.236*	.479	.000	1.66	4.81
	7	2.802*	.471	.000	1.25	4.35
	8	2.061*	.483	.002	.47	3.65
	9	2.364*	.532	.001	.61	4.12
	10	2.364*	.596	.005	.40	4.33
	11	.464	.624	1.000	-1.59	2.52

Source: Own elaboration from data collected.

Regarding the seniority variable [classified in four groups: 1= less than 1 year, 2= between 1 and 3 years, 3= between 4 and 7 years, 4= more than 8 years]. The results of ANOVA test between groups of seniority, contained in Table 6, reveal statistically significant differences (p= 0.002), indicating that the perception of body image depends on the employees´ seniority in the organization.

Table 6. ANOVA test for perception of body image according to seniority.

Seniority	Sum of Squares	df	Mean Square	F	Sig.
	44.137	4	14.712	5.071	.002
	858.810	296	2.901		
	902.947	300			

Source: Own elaboration from data collected.

Table 7 contains the results of Tukey test for the perception of body image respect to seniority groups. It can be seen that there are no significant differences between groups 1 and 2, 1 and 3, 1 and 4, as well as in 3 and 4. This indicates that there are significant differences only between groups 2 with 3, and 2 with 4. Which reveals that seniority of one year, has influence on the perception of body image of the subjects.

Table 5. Tukey test for the perception of body image according to seniority.

Seniority	Seniority	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.310	.327	.779	-.53	1.15
	3	-.463	.350	.550	-1.37	.44
	4	-.543	.353	.415	-1.45	.37
2	1	-.310	.327	.779	-1.15	.53
	3	-.773*	.252	.013	-1.42	-.12*
	4	-.853*	.255	.005	-1.51	-.19*
3	1	.463	.350	.550	-.44	1.37
	2	.773*	.252	.013	.12	1.42*
	4	-.080	.285	.992	-.82	.66
4	1	.543	.353	.415	-.37	1.45
	2	.853*	.255	.005	.19	1.51*
	3	.080	.285	.992	-.66	.82

Source: Own elaboration from data collected.

4. Conclusion

The purpose of this research was to analyze the presence of significant differences between the perception of body image, with respect to age, weight, education, seniority and position in the organization, in employees of middle managers who work in the manufacturing industry of the Northern border of Chihuahua.

The results reveal that the perception of the employees, according to the body image is different according to age, weight and seniority, being the opposite with the education and position variables, which presented significant differences. This indicates that the latter two variables do not reject the null hypothesis formulated in the research.

Respect to age, results show that 50% of the subjects between 20 and 29 years old, and between 40 and 49 years old, perceive to have a body image with normal weight, while the other 50% perceived to be overweight. Regarding to weight, results show that the perception of body image is influenced by the subjects´ weight, in this research weight was classified in 12 groups, finding significant differences, which provides enough statistical evidence to reject the null hypothesis formulated for this variable. According to seniority, the results display that employees who have one year working on the company, perceive to have more robust body image. This can be due to the low physical activity, inappropriate eating habits or the available time at work to have lunch. Obesity as a reversible risk, represent an opportunity to managers, which could benefit from the implementation of programs aimed at preventing and treating obesity in its workers, promoting healthy lifestyles because of its significant impact on public health, productivity and well-being of employees (Agredo et al., 2013).

Much remains to be done to reduce obesity rate(Palmeros Exsome et al., 2016). The effort made by different health agencies in order to understand, prevent and treat with sucess this disease is not enough, it is considered necessary to incorporate prevention as part of social development policies (Garcia-Garcia et al., 2008; Gómez-Delgado et al., 2016; Levy et al., 2016). This is why institutions such as organizations must make extraordinary efforts to institute annual medical check-ups for their workers and make more targeted interventions to care for the health of people who are not yet obese (Organizacion Mundial de la Salud, 2016; Ratner et al., 2008).The leaders of the companies must value that having healthy people will generate greater performance, workers will be efficient, in this way helping to be more competitive(Ratner et al., 2008).

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5. References

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