The Relationship of Human Capital Management and Productivity in a Construction Company in 2021

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Abstract

The aim of this research is to determine the relationship between human capital management and productivity in a construction company. The research methodology used is quantitative, applied and correlational, with a non-experimental design and cross-sectional classification. For data collection, the survey technique was applied, using the questionnaire as an instrument in a sample of 21 workers in the company. Subsequently, for the statistical analyses, the SPSS programme was used, and the Spearman correlation coefficient analysis was used, which yielded a significant value of p-value < 0.05, with a positive correlation coefficient of 0.818 on the relationship between the two variables studied. Finally, according to the results obtained, it is concluded that there is a positive and strong relationship between Human Capital Management and productivity in a construction company in the year 2021.

Keywords
Human capital management, productivity, efficiency, effectiveness.

1. Introduction
Nowadays, human capital is defined as a set of skills, knowledge and capabilities of an organisation's workers, which allows them to be more efficient, improving the productivity and competitiveness of the company in the changing global markets (Checa et al. 2020).

On the other hand, Martinez and Mateus (2020) point out that organisational development is directly connected to the management of human capital and productivity, but for this, organisations should not have deficiencies when managing human capital because productivity is associated with the performance of people and the optimisation of the company's financial, material and technological resources.

After analysing articles, we found several international authors who mention that there is a relationship between human capital management and productivity, one of them, Unger et al. (2014), in their research aims to contribute to the identification of the characteristics of the economic competitiveness of the states of Mexico, focusing on 32 entities of the country and concludes that the most competitive entities are in the Federal District, Querétaro, the State of Mexico, Jalisco and the northern border states, as they have a more productive and diversified economy because they have better human capital and higher wages. Likewise, Bernal et al. (2020), in their study aims to identify the relationship between human capital and organisational performance of medium and large companies in the state of Tamaulipas (Mexico), for this, they have a sample of 253 companies in the commercial sector in Mexico and conclude after using the statistical techniques of correlation and linear regression, that there is a directly proportional dependence relationship between human capital and organisational performance where each increase in the unit of human capital, organisational performance increases 12 times its value. On the other hand, Caballero (2018), in his article aims to identify the internal HR management factors that influence labour productivity in beef processing in the meat processing plant Piquete Cue, installed in the city Limpio - Paraguay, in 2016, having as a sample 9 participants, concludes that, it is possible to identify the internal management factors that influence labour productivity such as: competencies, skills, compensation, employee relations, attitude, work environment, performance and motivation. Similarly, Leyva et al. (2020), in their study aim to measure the influence that the performance of human capital has on the capacity for technological innovation perceived by managers of SMEs in Hermosillo, Sonora (Mexico), therefore, they process a sample of 108 managers, which allowed them to conclude

that managers develop technological innovation through management strategies within administrative processes, based on the performance of human capital as a productive factor.

In this context, there is a need to study these variables, since in Peru, according to the National Confederation of Private Business Institutions - CONFIEP (2020), companies face problems of growth in the market, due to the economic crisis and the fact that they generally place personnel with no vision of the future in key positions in the company. Furthermore, according to the Ministry of Production - PRODUCE (2021), in order for an organisation to generate advantages over its competitors and adapt to the new pandemic times, it must propose initiatives that boost human capital, innovation and, therefore, productivity and organisational competitiveness.

Therefore, the objective of this research is to determine the relationship between human capital management and productivity in a construction company in the year 2021. It is also hypothesised that human capital management is related to productivity in a construction company in the year 2021.

2. Literature Review

According to the literature, human capital is the most important for business success (Leyva et al. 2020; Miranda 2016). In this regard, Huanca (2020) and Gonzales (2019) define capabilities, behaviour and labour compensation as the dimensions of human capital. Capabilities are the knowledge, skills and competencies or attitudes that a person acquires during the course of his or her life (Lozano 2007), behaviour is the study of the worker's conduct and way of acting in the organisation or in the environment in which he or she is (Davenport 2000), and labour compensation is the incentive, salary or bonus that employees receive for having worked or performed (Madero 2016). In this way, human talent management is a managerial philosophy about values, beliefs, roles, organisations and society (Rondón 2016).

On the other hand, productivity is defined as a result of the work done obtained through good task planning in the organisation (Advíncula 2019). In relation to productivity, they define the dimensions of productivity as the effectiveness and efficiency of an organisation. Efficiency is how a better result is obtained using a smaller amount of resource and time and effectiveness is achieving the organisation's objectives, doing the right things, developing the functions of human capital effectively (Robbins and Judge 2013).

Arévalo et al. (2017) point out that human capital is fundamental for the success of any type of company, as it is difficult to compete in today's world without qualified, motivated and committed personnel. In terms of national research we find Chávez and Izquierdo (2018), with their research that aims to determine the relationship between human talent and labour productivity of the company located in Cajamarca, considering a sample of 23 workers and demonstrate that human capital is important in any company for productivity, as it causes a more efficient level of performance for the customer and company. Likewise, Huanca (2020), in his study determines the relationship between human capital management and labour productivity of the health care staff of the health centre Clas Juan Pablo II - Manchay, which has a sample of 80 people and concludes that there is a direct and significant relationship between human capital management and labour productivity of health care staff. Similarly, Gonzales (2019), in his research aims to describe and analyse the management of human capital to achieve productivity in the Infrastructure Management of the regional government of Cusco, using a sample of 30 respondents and showed that adequate management of human capital causes acceptable levels of productivity. On the other hand, the research of Alvines and Bendezú (2018), which aims to determine how human talent management influences the productivity of a financial company in the district of San Isidro - Lima, which, has a sample of 25 people and determines that the impact of human talent management on the productivity of the financial institution is due to having trained, competent and motivated staff.

3. Methods

The present research has a quantitative, non-experimental, cross-sectional, correlational approach (Hernández et al. 2014; Rodríguez and Mendivelso 2018; Vargas 2009). Regarding the population, it is composed of 21 employees of a construction company. It should be noted that it worked with the entire population. To measure the human capital management variable and the productivity variable, the survey technique was applied, and the questionnaire as an instrument, proposed by Huanca (2020), the questionnaire of the human capital management variable consisted of 24 items and their respective dimensions such as skills, behaviour and workers' compensation. Regarding the questionnaire of the productivity variable, it is made up of 23 items and its dimensions such as efficiency and

effectiveness. In order to measure the responses in both questionnaires, the Likert scale was used, determined as follows: 1 is never, 2 is almost never, 3 is sometimes, 4 is almost always and 5 is always.

The development of this research was carried out with a commitment to responsibility, honesty and transparency in the results, without any manipulation of the data obtained. Furthermore, we have the authorisation of the company's owners and workers for the development of the study. In the same way, it is mentioned that this research does not present plagiarism, since all the mentioned authors are correctly cited.

4. Results and Discussion

The socio-demographic characteristics of the company's workers in terms of educational level were dominated by workers with a Bachelor's degree, 14.20% (3); over those with a Bachelor's degree, 4.80% (1); and the majority did not specify which group they belonged to, 81% (17). With reference to the age group, the highest proportion of workers were aged between 30 and 39 years, 52.40% (11); followed by workers under 30 years, 28.60% (6); and 40 years and over, 19% (4). Finally, in terms of gender, males predominated, 76.20% (16), over females, 23.80% (5).

Table 1 shows the average scores of the Human Capital Management variable and the Capability and Behaviour dimensions, which were well valued, since they are higher than the average of the scale (3); however, the Labour Compensation dimension is negatively valued with an average of less than 3 (Table 1).

Table 1. Mean and standard deviation of the Human Capital Management and dimensions evaluated

Dimensions / Variables	N	Mean	Standard deviation
Capacity	21	3.627	0.542
Behaviour	21	3.540	0.623
Worker Compensation	21	2.910	0.521
Human Capital Management	21	3.359	0.509

Similarly, Table 2 shows that the Productivity variable and its Efficiency and Effectiveness dimensions obtained good scores, as their mean scores are higher than the scale mean (3). Likewise, when comparing the scores between these dimensions, it was found that the Effectiveness dimension achieved a better result, as it has a mean (4.468), which is higher than the Efficiency dimension.

Table 2. Mean and standard deviation obtained in the productivity and dimensions evaluated

Dimensions / Variables	N	Mean	Standard deviation
Efficiency	21	3.455	0.539
Effectiveness	21	4.468	0.493
Productivity	21	3.962	0.452

Table 3 shows the reliability analysis of the Human Capital Management scale, which was estimated by the internal consistency method using Cronbach's Alpha. A coefficient of 0.949 was found for Human Capital Management; and a coefficient between [0.847 - 0.930] for its dimensions. This indicates that the instrument used in this study has a very high reliability (Table 3).

Table 3. Internal consistency of the Human Capital Management scale

Dimensions / Variables	N° of items	Cronbach's Alpha
Capacity	06	0.854
Behaviour	06	0.847
Workplace Compensation	09	0.930
Human Capital Management	21	0.949

Similarly, table 4 shows the reliability of the Productivity scale, which was also estimated by the internal consistency method using Cronbach's Alpha. A coefficient of 0.910 was found for Productivity; 0.899 for Efficiency, and a coefficient of 0.867 for Effectiveness. Therefore, the instrument for measuring Productivity used in this study has a very high reliability (Table 4).

Table 4. Internal consistency of the Productivity Scale

Dimensions / Variables	N° de Ítems	Cronbach's Alpha
Efficiency	09	0.899
Effectiveness	06	0.867
Productivity	15	0.910

The factor analysis or validity analysis of the scale for measuring Human Capital Management was developed with the corrected homogeneity index and factor analysis, as shown in Table 5. In the homogeneity index we found item-subtest correlations between [0.522 - 0.926], item-test correlations between [0.427 - 0.899], and subtest-test correlations between [0.678 - 0.899]. (Table 5)

Table 5. Validity of the Human Capital Management Scale

Human Capital Management	Ítems	Corrected homogeneity index			Factorial loading
		Rho_1	Rho_2	Rh_3	
Capacity	CAP 01	0.592	0.427		0.630
	CAP 02	0.642	0.465		0.689
	CAP 03	0.732	0.699	0.678	0.808
	CAP 04	0.639	0.493		0.670
	CAP 05	0.670	0.759		0.767
	CAP 06	0.622	0.846		0.707
Behaviour	COM 02	0.583	0.602		0.666
	COM 03	0.738	0.738		0.832
	COM 04	0.763	0.738	0.796	0.892
	COM 06	0.522	0.493		0.523
	COM 07	0.560	0.611		0.565
	COM 08	0.722	0.814		0.796
Compensation Labour	COL 01	0.852	0.839		0.883
	COL 02	0.690	0.644		0.707
	COL 03	0.926	0.899		0.968
	COL 05	0.750	0.856		0.767
	COL 06	0.835	0.803	0.899	0.882
	COL 07	0.889	0.850		0.932
	COL 08	0.594	0.581		0.581
	COL 09	0.781	0.786		0.807
	COL 10	0.574	0.627		0.602
Rho1: Item - Subtest correlation; Rho2: Item - Test correlation; Rh3: Subtest - Test correlation.					

In the same way, the factor analysis of the scale for measuring Labour Productivity was developed with the corrected homogeneity index and the factor analysis, as can be seen in Table 6. According to Elosua (2005), items with a corrected homogeneity index greater than 0.4 are very good for the dimension to which they belong. Also, in the factor analysis, factor loadings of the items with their dimensions were found to be between [0.523 - 0.968]. According to Hair et al. (1999), items with factor loadings between 0.3 and 0.5 have minimal contribution, items greater than 0.5 and 0.7 have significant contribution, and those items greater than 0.7 have relevant contribution to the dimension they belong to (Table 6).

Table 6. Validity of the Productivity scale

Productividad	Ítems	Corrected homogeneity index			Factorial loading
		Rho_1	Rho_2	Rh_3	
Efficiency	EFN_01	0.591	0.678	0.531	0.616
	EFN_02	0.638	0.710		0.649
	EFN_03	0.661	0.691		0.714
	EFN_05	0.671	0.547		0.703
	EFN_08	0.631	0.503		0.678
	EFN_09	0.845	0.814		0.903
	EFN_10	0.731	0.675		0.759
	EFN_11	0.792	0.679		0.845
	EFN_12	0.699	0.665		0.754
Effectiveness	EFC_05	0.469	0.624	0.531	0.874
	EFC_06	0.665	0.590		0.848
	EFC_07	0.883	0.582		0.807
	EFC_08	0.625	0.389		0.855
	EFC_09	0.852	0.671		0.814
	EFC_11	0.607	0.616		0.865
Rho1: Item - Subtest correlation; Rho2: Item - Test correlation; Rh3: Subtest - Test correlation.					

4.1. Normality Analysis and Hypothesis Approach

H0: The distribution of variables and dimensions resembles normal.
H1: The distribution of variables and dimensions do not resemble normal.

The normality test contrasted on the dimensions and variables using the Shapiro Wilk statistic as shown in Table 7. Non-significant results (p-values > 0.05) were found for the Human Capital Management, capability and behaviour dimension. On the other hand, significant results (p-values < 0.05) were found for Labour Compensation and Productivity with its dimensions. Consequently, the statistical criterion indicates that the distribution of Human Capital Management, the capability dimension and the behaviour dimension resemble the normal distribution. Therefore, H0 is not rejected for the Human Capital Management, capability and behaviour dimensions.

Table 7. Shapiro Wilk normality test of variables and dimensions

Dimensions / Variables	Shapiro Wilk			Asymmetry	Kurtosis
	Statistician	gl	p-value		
Capacity	0.976	21	0.857	-0.102	-0.142
Behaviour	0.958	21	0.473	-0.250	-0.356
Workplace Compensation	0.956	21	0.018	-0.309	-0.687
Human Capital Management	0.954	21	0.234	-0.332	-0.124
Efficiency	0.860	21	0.006	1,054	0.557
Effectiveness	0.900	21	0.035	-0.677	-0.465
Productivity	0.907	21	0.048	0.298	-0.174

H0G: Human capital management is not related to productivity in a construction company in 2021.
H1G: Human capital management is related to productivity in a construction company in 2021.
Regarding the general hypothesis, as can be seen in Table 8, the p-value obtained is significant (p-value = 0.00001 < α = 0.05), with a positive correlation coefficient (Spearman's Rho > 0); consequently, it can be said that there is statistical evidence to affirm that human capital management is related to productivity in a construction company, in the year 2021. Furthermore, Spearman's Rho coefficient = 0.839 was found; and according to Sierra (2001) strong correlations are considered to be between [0.7 - 1]. Therefore, H0G is rejected and H1G is accepted.

Table 8. Spearman's Rho correlation coefficient obtained for the general hypothesis

Hypothesis	n	Rho Spearman	p-value
Human Capital Management <-> Productivity	21	0.839	0.00001

As for the specific hypotheses, as can be seen in Table 9, the p-values obtained are significant (p-value < α = 0.05), with positive correlation coefficients (Spearman's Rho > 0); consequently, it can be said that there is statistical evidence to affirm that skills, behaviour, and labour compensation are positively related to the productivity of a construction company in the year 2021. Furthermore, Spearman's Rho coefficients were found to be between [0.653 - 0.794]; and according to Sierra (2001), strong correlations are considered to be between [0.7 - 1], and substantial between [0.5 - 0.69]. Therefore, H0E is rejected and H1E, H2E and H3E are accepted.

Table 9. Spearman's Rho correlation coefficient obtained for the specific hypotheses

Hipótesis	n	Rho Spearman	p-value
Capacity <-> Productivity	21	0.794	0.00001
Behaviour <-> Productivity	21	0.720	0.00001
Work Compensation <-> Productivity	21	0.653	0.001

It is evident that human capital management is related to productivity in a construction company, in the year 2021 is valid, since the Spearman correlation coefficient is positive (0.8) and a significance (p-value < α = 0.05). These results coincide with the studies conducted by Mamani (2019) and Muñoz (2019), who show that there is a relationship between these two variables, and that human capital management is important for the productivity of organisations, as people are the basis for generating and establishing differences between one company and another. On the other hand, hypothesis 1 is accepted, because the results indicate that the capability dimension is positively related to the productivity of the company, a significance (p-value < α = 0.05), and a Spearman's Rho coefficient of 0.7. This result is consistent with Vera's (2018) research, where he concludes that workers' skills are indispensable for teamwork and maintaining a good working environment. Likewise, Linares and Sánchez (2017), point out that working staff must have the necessary capacity to act by applying their knowledge, skills, abilities, motivations and attitudes to generate talent and organisational productivity.

Specific hypothesis 2 shows that the behavioural dimension is significantly and positively related to company productivity, with a significance (p-value < α = 0.05), and a Spearman's Rho coefficient of 0.7. Therefore, this hypothesis is accepted. This result is supported by the study of Huanca (2020), who determines that there is a relationship between these two variables, since behaviour influences the organisational climate and, therefore, affects personal productivity.

Similarly, specific hypothesis 3, labour compensation of human capital is positively related to productivity (p-value < α = 0.05), with a positive Spearman correlation coefficient of 0.6. This result reaffirms the studies conducted by Guillermo (2018) and Ore (2017) where they state that labour compensation is positively related to productivity, therefore, companies must carry out a good compensation system to motivate and generate labour productivity, since not obtaining a fair remuneration affects the productivity of workers and, therefore, of the organization.

5. Conclusion

It was possible to determine that there is a positive and strong relationship between human capital management and productivity in a construction company in the year 2021, establishing as valid the general hypothesis put forward in the research.

Likewise, it was found that the capabilities, behaviour and labour compensation of human capital are positively related to the productivity of the company, as correlations with high coefficients were found between these dimensions and labour productivity. This reflects that the capabilities, competencies and positive behaviour of personnel, linked to cooperation and teamwork, contribute to the productivity of the company. Similarly, the recognition and the fair and equitable wage policy that the company has in place to motivate, retain and engage staff results in competitive labour productivity.

On the other hand, the limitation in the development of the study was the access to the people, since, being in working hours, they did not have much time available to answer the survey or because of the pandemic some of them were doing remote work. However, after several visits to the plant and sending the questionnaire via email to the remaining workers, it was possible to survey all workers in the company.

Finally, it is concluded that the present research contributes to the existing literature, because researchers who wish to study the sector or the variables human capital management and productivity will be able to use it in their studies. Therefore, it is recommended that future studies related to these variables be conducted, since business and professional success is directly connected to good practice in human capital management.

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Biography

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