

Investing in resilient human capital: productivity and competitiveness outcomes in intermediate manufacturing

Abstract

In organizations, quality of life is intrinsically related to the current worldview, focused on the search for resilient collaborators, in the face of a complex, changing and fast world, which has led human beings to seek a transformation that allows them to subsist and evolve in any context. The objective of this study was to determine the relationship between the variables of investment in human capital and their influence on the competitiveness and productivity of the Honduran intermediate manufacturing industry, for which a relational study and a sample of 409 elements were used. In this study, applying an instrument validated by an expert jury and contrasting the pre-experimental hypothesis, applying the Spearman's Rho and Chi-square statistical tests to determine the influence between the previous variables for a value of $p < 0.05$. Obtaining as a result that the relationship between both variables is then significant, confirming the formulated hypothesis, therefore human capital is related to the levels of productivity and competitiveness in the intermediate manufacturing industry of Honduras.

Keywords: resilient human capital, productivity, manufacturing industry

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Mario Francisco Sosa González,¹ Osman Amaya López,¹ Maria Fernanda Toscano Galvis²

¹National Autonomous University of Honduras

²Research Group on Development and Application of Information and Communication Technologies, UNICESAR, Colombia

Correspondence: Mario Francisco Sosa González, National Autonomous University of Honduras, Metropolitan University of Honduras, Honduras, Email mario.sosa@umh.edu.hn

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Introduction

In organizations, quality of life is intrinsically related to the current worldview,¹ focused on the search for resilient collaborators in the face of a complex, changing and fast-moving world, which has led human beings to seek a transformation that allows them to survive and evolve in any work context (Piñeros, 213). In this sense, investment in human capital in intermediate manufacturing can be associated as an indicator of quality of life in the context of the welfare state,² since knowledge of quality of life has been linked to modernity and industrial development thinking, relating it to ideas of satisfaction of “needs and aspirations” that would mark the conditioning factors of the concept under discussion. In today's societies, the labor market has changed significantly in recent years.³ The phenomena related to globalization, increased competition due to the liberalization of markets and technological advances that are occurring more and more rapidly, dictate the guidelines of what companies will look for in the near future in their potential employees to be resilient, emerging and sustainable over time⁴ in addition to the above, changes from the sociological, economic and technological fields are also evident in these phenomena. This is why research gaps enhance the creation of new forms of work (temporary and part-time jobs) and new forms of labor relations between workers and employers.⁵ Given this scenario, finding more effective ways to adapt to the current globalized economy in the Honduran scenarios, it is essential to manage emerging ideas, where intermediate, public, private and social manufacturing organizations adopt innovative strategies in line with the challenging demands of the environment.

Therefore, traditional organizations are giving way to the incorporation of mechanisms that respond to the needs of the business world, in order to become intelligent, proactive, dynamic, creative and decentralized organizations, where the competencies of human talent are the cornerstone for the achievement of organizational objectives.⁶ Honduras is characterized for being a small and open economy in relation to the rest of the world, maintaining moderate

economic growth rates of around 3% in the long term, behavior sustained by agricultural activity, the financial system, commerce, telecommunications and manufacturing industry. Under this economic environment, it is important to ask what is the relationship between investment in human capital and competitiveness and productivity in the intermediate manufacturing activity in Honduras? In view of the above, the objective of this study is to determine the relationship between human capital investment variables and their influence on the competitiveness and productivity of the Honduran intermediate manufacturing industry.

Literature review

In this section, a bibliographic review was made of the general concepts of resilient human capital, as well as the theories on which competitiveness and productivity are based, within the intermediate manufacturing sector in Honduras.

Resilient human capital in the intermediate manufacturing industry

Organizational psychology, according to Piñeros (2013) defines resilience as the “ability to face critical situations; that is, to overcome with agility to changing situations and in high pressure contexts” (p. 7). This capacity is nowadays necessary in human capital since it allows overcoming changes in different work contexts, as a result of crises, trends and social, economic and political transformations that currently affect organizations. The author assures that the so-called labor resilience is considered as “transversal labor competencies for organizations” (p. 7).

According to the conclusions of a study conducted in Ecuador in companies of the industrial sector, it indicates that human capital is not recorded in a financial statement and its monitoring is lost sight of due to the lack of knowledge of its importance and the influence it has on the profitability of the business.⁷ It is important to recognize that human capital, being an intangible asset, is lost from sight in financial

statements, since only the cost, expense or money disbursement generated in a period of time is recorded, however, the accumulation of knowledge in the sum of its workers and over time, in their contributions and growth for the organization and in its direct impact on the value it generates for the company is left aside. This is why, for several years, human capital has been studied as the set of knowledge of each worker that serves to perform their daily activities.⁸ This research shows Honduran human capital as hardworking and resilient people, as they are able to adapt and overcome changes arising from economic, social and political crises that may affect organizations. People who understand that investment in education generates social and economic progress, as well as increasing their quality of life.⁹⁻¹¹

Competitiveness and productivity in Honduras

According to Porter (1990), competitiveness is the ability of an organization to maintain comparative advantages that enable it to attain, sustain and improve a certain position in the socioeconomic environment in which it operates. For its part, the World Economic

Forum (2012) has defined competitiveness as the “set of institutions, policies and factors that determine the level of productivity of a country”, so it can be stated that competitiveness is clearly related to productivity in organizations. Krugman (1997) states that it is not the countries that compete, but the companies that make up their productive apparatus. An important part of the engine that drives competitiveness in organizations is the human capital that makes life in the organizations. Thus, the impact that human capital has on competitiveness levels has grown in developed countries and particularly in Central America.¹² This impact is evident in Honduran companies, given that the educational levels of the individual are specialized for the position that the intermediate manufacturing industry or cluster occupy for productivity, where these should be of higher quality, efficiency, since, the individual will have a greater power of knowledge to generalize their work in the micro-environment of their autonomous capabilities will be more competitive.¹³ Table 1 below presents some postulates of competitiveness established by great and recognized scholars on the subject.

Table 1 Theories and postulates of competitiveness

Thinkers	Contributions / Theories
Adam Smit, year	He presented the first modern argument on competitiveness, questioning the mercantilist idea that the secret of a country's superiority was in the control of the economy and the maximization of its gold and silver reserves. Smith celebrated the benefits of competition to achieve efficiency maximization and consequently improve welfare.
David Ricardo	His theory of international trade outlines the contours for studying competitiveness, more precisely the early 19th century theory of comparative advantage recognizing that market forces will allocate a nation's resources to those sectors where it is relatively more productive.
J.S. Mill	He points out that Ricardian theory does not explain how international relative prices (i.e., the terms of trade) are established, and who he calls the role of domestic and foreign demands. This space was filled by Mill with his theory of "international values" and "reciprocal demand" (1873).
Ivancevich & Lorenzi	Competitiveness is the extent to which a nation, under free and fair market conditions, is capable of producing goods and services that can successfully pass the test of international markets, while maintaining and even increasing the real income of its citizens.
Jean-Jacques Servan-Shreiberg	The theories of unequal competitiveness, its most popular version was expressed in 1967, in the American Challenge.
Enright	Likewise, the competitiveness of a company is its capacity to supply goods and services equally or more effectively and efficiently than its competitors.
Walls,	Competitiveness can enable companies to overcome the limitations of their small domestic markets and reach their full potential.
Gary Hamel and C.K. Prahalad	Managers of successful companies are more interested in creating new competitive spaces than in positioning themselves within their existing market. Their goal is to transform the industry in which they compete, not to transform their company. They indicate how to achieve their "opportunity share" by setting "stretch goals" and building their "core competencies". Leading organizations are working to create a new tomorrow. Those who commit to creating this new future will receive great rewards and satisfaction.
Michael Porter	Competitiveness is the capacity of a company to produce and market products in better conditions of price, quality and opportunity than its rivals.

When competitiveness increases in an organization, so does productivity, due to the implementation of more efficient production processes and improvements in product quality (Rodríguez, 2014). For some decades, according to the Honduran Council of Private Enterprise (COHEP, 2015) productivity has been “awakening greater interest among business leaders worldwide”, since it allows understanding how it impacts the growth of economies, and why it is important to measure it. In Honduras, like other Latin American countries, there is no official measurement of productivity (COHEP, 2015), however, the Inter-American Development Bank (IDB) in 2014 identified low productivity as one of the main obstacles to the country's growth. Honduras despite “presenting relatively high levels of investment and capital accumulation, these have not translated into high growth rates (IDB, 2014).

Methodology

This research was developed mainly under the methodological guide of a quantitative study, which seeks to respond to existing problems in Honduran intermediate manufacturing. An instrument validated by expert judgment was applied to contrast the hypothesis. The non-experimental design was used, the Spearman's Rho and Chi-square statistical tests were applied to determine the influence between the variables (human capital, productivity and competitiveness) with a p-value < 0.05, the correlation between the variables is therefore significant, confirming the hypothesis formulated and thus concluding that human capital is related to productivity and competitiveness in the Honduran intermediate manufacturing industry. The unit of analysis was the work performed by all the collaborators of the companies affiliated to the Honduran Association of Maquiladoras Table 2.

Table 2 Research criteria

Inclusion	Employee of intermediate production maquiladora company in the export of vehicle harnesses and wiring harnesses.
Exclusion	Employee working in a maquiladora with a textile production plant

Note: own elaboration (2021).

The type of study is correlational, since it allows explaining how the variables human capital, competitiveness and productivity are

Table 3 Results Zones of the Intermediate Manufacturing Sector Honduras

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	North Zone	158	38.6	38.6	38.6
	Downtown	182	44.5	44.5	83.1
	South Zone	69	16.9	16.9	100
	Total	409	100	100	

Note: Data obtained (2021).

The information was collected through anonymous surveys and via internet, with a likert scale scheme. A patient process of dialogue was carried out at times that did not disturb the routine activity of the respondents, and that their participation expressed their willingness without representing any commitment, which is why it took a very long time. The reliability validity test of the measurement instrument (survey) was as follows: a) Competitiveness and productivity variable; valid cases: 409, number of elements (items) 7 statements, with a range of lower and upper limit standard deviation 0.832 - 0.905; Cronbach's alpha of 0.902, i.e. high reliability, b) Human capital, valid cases: 409, number of elements (items) 8 statements, with a range of lower and upper limit standard deviation 0.865 - 0.905, i.e. high reliability, 902, i.e. high reliability, b) Human capital, valid cases 409, number of elements (items) 8 statements, with a lower and upper limit standard

related. The study sample consisted of 409 employees of maquiladora companies of intermediate production in the export of harnesses and vehicle wiring, in which a stratified probabilistic sampling was taken (see Table 3). The sample was divided by geographical zones: northern zone 158 employees, central zone 182 employees and southern zone 69 employees; with this stratification it was possible to identify that the zones with the greatest foreign investment in intermediate manufacturing maquilas are in the northern and central zones.

deviation range 0.865 - 0.923; high Cronbach's alpha of 0.903, which also indicates that the instrument has a high reliability.

Analysis of results

The results obtained for the variables under study were as follows:

Table 4 shows that 52.8% of those surveyed strongly agree with the initiative to promote educational changes, which could be beneficial for increasing the competitiveness and productivity of the manufacturing cluster. On the other hand, 1.7% disagreed strongly, which could be due to employees who show little interest in professional growth or lack of awareness of the importance of keeping abreast of the constant changes affecting organizations worldwide.

Table 4 Initiative result of promoting educational changes

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Strongly Disagree	7	1.7	1.7	1.7
	In Disagreement	20	4.9	4.9	6.6
	According to	62	15.2	15.2	21.8
	Agreed	104	25.4	25.4	47.2
	Strongly Agree	216	52.8	52.8	100
	Total	409	100	100	

Note: Prepared by the authors.

The results shown in Table 5 indicate that 49.6% of the employees strongly agree that intermediate manufacturing companies should implement the initiative to train their human resources, which can generate more competitiveness and make them more productive. It is also evident in the results that 14.9 % , product of the sum of the percentages of disagreement and very much in disagreement with

this initiative, generates an alarm signal, since they are not interested in training or specializations to increase productivity, which would result in stagnation or backwardness for this cluster of companies. The results obtained in the Chi-square tests by geographic zones are shown below: Table 6.

Table 5 Results, Training to improve productivity performance

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Strongly Disagree	25	6.1	6.1	6.1
	In Disagreement	36	8.8	8.8	14.9
	According to	61	14.9	14.9	29.8
	Agreed	84	20.5	20.5	50.4
	Strongly Agree	203	49.6	49.6	100
	Total	409	100	100	

Note: Prepared by the company.

Table 6 Chi-square tests

Country Zone		Value	Degrees of freedom	Asymptotic sign (bilateral)
North Zone	Pearson's Chi-square	64.519b	16	0
	Likelihood ratio	50.564	16	0
	Linear by linear association	30.608	1	0
	N of valid cases	158		
Downtown	Pearson's Chi-square	73.889c	16	0
	Likelihood ratio	62.512	16	0
	Linear by linear association	24.225	1	0
	N of valid cases	182		
South Zone	Pearson's Chi-square	18.846d	12	0.092
	Likelihood ratio	18.054	12	0.114
	Linear by linear association	1.593	1	0.207
	N of valid cases	69		
Total	Pearson's Chi-square	134.626a	16	0
	Likelihood ratio	104.332	16	0
	Linear by linear association	54.661	1	0
	N of valid cases	409		

- a. 10 cells (40.0%) have an expected frequency of less than 5. The minimum expected frequency is .043.
- b. 17 cells (68.0%) have an expected frequency of less than 5. The minimum expected frequency is .04.
- c. 13 cells (52.0%) have an expected frequency of less than 5. The minimum expected frequency is .03.
- d. 16 cells (80.0%) have an expected frequency of less than 5. The minimum expected frequency is .04.

Note: Prepared by the authors.

Figure 1 indicates that there is reciprocity between the human capital variable and the competitiveness and productivity variables in the northern zone of Honduras (chi square = 64.519b). This may be due to the fact that this sector is the most productive and competitive in the country; its proximity to the most important port of Central America in the Atlantic Ocean, becomes a great opportunity for this area for the export of products to Europe and the northern United States, so it can be said that there is a positive correlation in labor competition and productivity.

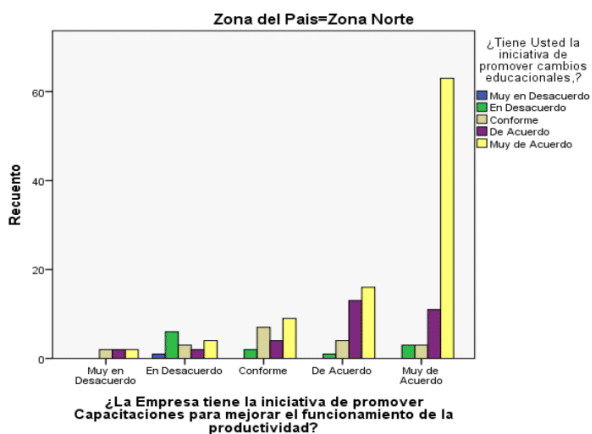


Figure 1 Chi-square north zone.

Note: Prepared by the authors.

The results shown in Figure 2 indicate a correlation between the human capital variable and the competitiveness and productivity variables in the Central Zone of Honduras (chi-square = 73.889c). The capital of Honduras is located in this sector, an area with a large number of educational centers, which translates into a great strength for those companies with the initiative to promote training to improve the competitiveness and productivity of human capital Figure 3.

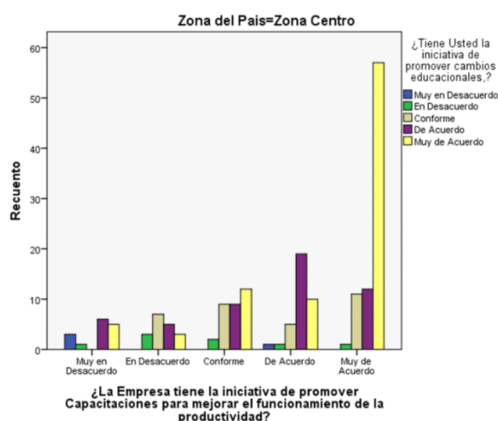


Figure 2 Chi-square central zone.

Note: Prepared by the authors.

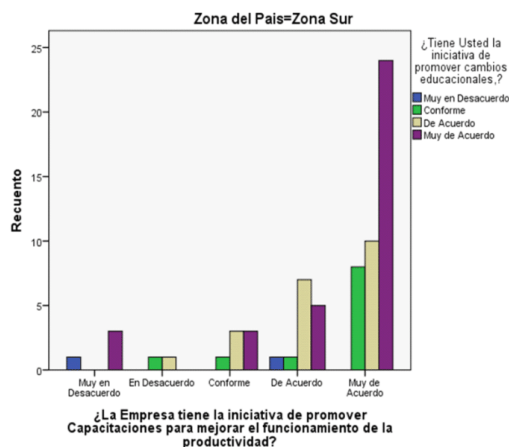


Figure 3 Chi-square south zone.

Note: Prepared by the authors.

Unlike the northern and central zones of Honduras, according to the results obtained (chi square = 18.846d), this zone does not present a correlation between the variables studied, perhaps because in this sector there is a reduced investment of the intermediate manufacturing cluster, however, it is a very productive zone since it is located near the port of Henecan, from where the manufacturing production merchandise is exported to the Asian market and the southern part of the United States, which are the markets with the greatest demand for our intermediate manufacturing products.

The total square chi of the 3 zones is 134.0626a.

To contrast our hypotheses we employed the Chi-square test.

Where:

Significance level shall be $\alpha = 0.05$.

Region of acceptance and rejection:

RA/HO: P-value < 0.05

RR/HO: P-value > 0.05

Therefore:

Since the P-value is $0.000 < 0.05$, we accept our alternative hypothesis.

Hi: There is a positive and significant correlation between Human Capital and Productivity and Competitiveness in intermediate manufacturing companies in Honduras in the year 2021.

Discussion

According to the results obtained, we can observe that with respect to the objective of this research, there is a relationship between the variables investment in human capital, competitiveness and productivity, since the result obtained from the totalized chi-square of the 3 zones is less than 0.05, therefore Porter's theory is proven. In this case the only meaningful concept of competitiveness at the national level is productivity.

How should productivity be achieved in Honduras?

Productivity is the value of production per unit of labor or capital per Honduran. "It depends both on the quality and characteristics of the products (which determine the prices they can reach) and on the efficiency with which they are produced", therefore the alternative hypothesis is accepted. According to the results, it can be observed that the collaborators think that these intermediate manufacturing companies that make up this cluster should train their human resources in order to be more productive, to be on par with continuous improvement, creativity, and the generation of new products or services are complements of innovation. There is also a minority who believe the opposite, which could be detrimental to the growth of the cluster of companies studied.¹⁴⁻²⁹

Conclusion

This research determined, according to the results obtained, the existence of correlation between the variables studied. It was also shown that companies should promote training to improve productivity performance. With respect to the initiative that each collaborator has to promote educational changes in the different main manufacturing zones of Honduras, it becomes a positive guide to increase both competitiveness and productivity in the future. On the other hand, the academic background of the human capital of the employees of this intermediate manufacturing cluster is of great importance, since a

highly educated or specialized employee is more productive. Finally, it can be affirmed that there is a relationship and correlation between the variables investigated which are human capital, competitiveness and productivity since it was demonstrated in this article that there is a very strong effect in intermediate manufacturing companies and this consequence is positive and significant given that the value of the chi-square test obtained 134.626a and a significance value of 0.0000.

It is important to highlight that during the development of the research there were some limitations such as, for example, the appearance of the COVID-19 pandemic affecting the immediate response of the companies that make up the cluster, other causes that affected as strong limitations were hurricanes Iota and Eta that hit Honduras in the month of November 2020 impacting a lot the northern zone which is the area where the intermediate manufacturing is centered as mentioned above, This sector has the production maquilas in the intermediate manufacturing sector of the country, since Honduras has the most important port of Central America in the Atlantic, on the other hand, many participants of these manufacturing companies did not want to collaborate for fear or embarrassment to express themselves, also many employees did not have emails for sending and receiving information, which made it difficult to minimize the time in the collection of data.

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None.

Conflicts of interest

The author declares there is no conflict of interest.

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