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## VERIFICATION OF THE EXISTANCE OF HUMAN AND SOCIAL CAPITAL IN HIGHLY TECHNICAL EDUCATION INSTITUTIONS AFFILIATED WITH NBTVE, LIBYA

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### Abstract:

*The current study explores the human and social capital existence in Hi-Tech Education Institutions, which are affiliated with the National Board for Technical and Vocational Education (NBTVE), Libya. In order to verify existence of valuable talent pool, we conducted a research in cooperation with the members of NBTVE-affiliated Technical Education Institutions in Libya. The research methodology is descriptive based on frequency analysis and descriptive statistics. The data of the research has been collected by questionnaires. The statistical population includes all the NBTVE teaching members. The statistical sample group includes 200 people, out of which, we selected the sample for the current study using simple random sampling method.*

*The reliability and validity of the scales were proven. The results showed that social and human capital existence varies in terms of the variables. Broadly, it can be said that in order to make use of such valuable resources, these institutions should pay attention by focusing on the key variables, which help promoting and enhancing their performances, and contribute to increasing their competitive advantage. On the other hand, lack of social capital efficiency has a negative effect on human capital as well as productivity of educational institutions.*

**Keywords:** Human Capital; Social Capital; Highly Technical Education Institutions; NBTVE in Libya.

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## 1. Introduction

The rapid IT progress converted human experience into capital while commodity information and innovation have become features of success and development; therefore, the focus of organizations has shifted from relying solely on natural resources to depending on intellectual resources. Shane and Venkataraman (2000) has pointed out in their research that people, who exhibit higher human capital levels, have the tendency to become entrepreneurs because they have greater self-

confidence levels, occupational knowledge, and capability to take risks and avoid losses; so, human capital mainly comprises certain advantages, which individuals enjoy in different forms, including experience, skills, recognition, and professional understanding that makes them efficient, productive, and helps convert their skills into financial capital (Becker, 1964; Mincer, 1974).

On the other hand, the interrelationships among the individuals are also an asset. The concept of social capital attracts the decision-makers' attention to "fitness of the players" in addition to their interrelationships (Lin et al., 1981; Portes, 1998). This concept also focuses on converting connections and social obligations into realizable economic benefit following some rules and involving some entities. In any country or economy, the social capital facilitates some individuals' actions for the benefit of people, organizations, and societies (Bourdieu, 1986; Coleman, 1986). It capitalizes on the interpersonal interactions. Kilduff and Tsai (2003) mentioned that social capital can be individual or collective. The collective form of social capital is in the form of organizations, groups, nations, or communities. Their perspective raises the discussion of social capital at the level of organizations (Leana and Van Buren, 1999), individuals, industries and institutions. (Burt, 2017). In the nutshell, it is a multi-level approach that explores and integrates how characteristics of exchange networks affect the development of individuals.

Eminent researchers and writers (Nahapiet and Ghoshal, 1998; Pennings et al., 1998; Adler and Kwon, 2002) conducted researches on the relationships between human and social capital forms; however, many industries lack knowledge regarding the relations within specific industries. Generally, the nature of such connections and relations isn't clear; however, it is an established fact that such relations have commonalities in different industries. Some writers (Coleman, 1988; Bruderl and Preisendorfer, 1998; Nahapiet and Ghoshal, 1998; Lester et al., 2008; Florin et al., 2003) have mentioned in their publications about insufficient social structure knowledge and lack of information on human capital. In addition, it is still not clear whether the benefits of social capital (positive externalities) accrue mainly because of social status (negative externalities) or their interrelationships (Glaeser et al., 2002). An important source of human capital development is technical education; however, instilling common norms among people also develops social cohesion.

Thus, the humans are the most important asset in different institutions. This indicates the importance and role of the human element in innovation, development, and achievement of competitive advantages. Intellectual capital is a strategically important asset for organizational success because it results in differentiation, which gives additional power to it for adding value to any organization; therefore, to keep pace with these developments, organizations should focus on intellectual capital for improving competitiveness (Zerenler, Hasiloglu, and Sezgin, 2008). Thus, it is important to develop understanding about the extent, to which, every intellectual capital component creates value for achieving competitive edge.

For this purpose, human and social forms of capital are two important components. The current study has been conducted to create awareness about the existence of human and social capital at NBTVE-affiliated high-tech education institutions in Libya.

## 2. Literature Review

The importance of investing in the components of intellectual capital to add value to an organization enhances its competitiveness as the most important resource in today's knowledge-based economy. Investing in intellectual capital by spending on enhancing the employees' capabilities, improving their skills, and strengthening the organization to assure human capital development in terms of knowledge, skill, ability and creativity. It leads to more efficiency and makes investment in intellectual capital more feasible because it creates value for the organization, and promotes success, competitiveness and profitability (Mohamed, 2017).

Some researchers have mentioned that the postmodern world has become a knowledge society because of human and social types of capital, which assure survival and organizational performance (Pfeffer, 1994; Kogut and Zander, 1996; Uzzi, 1996). Both the mentioned types of resources are generally available to every organization (Hitt and Duane, 2002).

“Social and human capital” represent the combination of economic and social attitudes, ideas, and assumptions. In conclusion, social capital is individual and society-centric while human capital is economy-centric.

### 2.1. Human Capital

It is basically an economic terminology, which focuses on human labor resources in terms of economic value in an economy. Human Capital is defined as “the most significant component of intellectual capital,” and it includes many things that connect employees with their colleagues within the organizations in terms of experiences, competencies, knowledge, skills, and abilities (Schultz, 1961; Bontis and Serenko, 2009). Human capital is a broad term, which also includes the accumulated investment in employees' training and improving their competence (Kannan and Aulbur, 2004). The literature mainly presents two major arguments to acknowledge the human capital investment as a source of a firm's survival. Highly trained and skilled professionals have higher tendency to deliver quality services (Mincer, 1974; Becker, 1964). In addition, they have higher marketability because of their credentials as service providers (Arrow, 1973).

### 2.2. Social Capital

This term was coined by social scientists as they focused on certain complicated but intangible values, which are linked with social interactions between people, the extent to their relationships, and their social cooperation that has a definitive impact on their behavior. The institutionalized knowledge and experience are in different forms such as work-routines, patent rights, technical manuals, and structure-formations (Nahapiet and Ghoshal, 1998, p: 243,244).

Both the above-mentioned researchers claimed that social capital is in fact a facilitator; so, it isn't a regular intellectual capital component. Social capital is beyond networking connection; so, it requires rules to facilitate interactions, relations, and cooperation (Subramaniam and Youndt, 2005).

Thus, there are many different variations and uses of social capital as compared to human capital, because practically, social capital is individual-centered; so, it is used in terms of finding ways to improve individuals' lives, and besides, it is a substantially broader and flexible concept of "value creation."

This concept might also include reputation, social benefits, mentoring, connections, influence and social support. Social capital is a concept that is closely linked with social networking or social media. The critics of social capital claim that it is a limiting concept because it oversimplifies human interaction and degrades the study of human biases or relationships in an economy.

Both of the mentioned terminologies have been generally used, and people don't pay attention to how to make sense of human activities and relations in the economic and social scenarios; however, social networking is imperative in terms of shaping the future of social capital. The concept of social capital has no significance without embedded resources and social networks. This concept has intellectual significance as well as practical applications. Moreover, social networking has its benefits, which have a lot to contribute towards sustainable social capital development. With the advent of cyber-networks, online networking has augmented the social capital development, which marked a new era that has its own challenges and opportunities for both practical and theoretical applications.

### **2.3. Human and Social Capital**

Economists have presented the idea of educating people about economics during the last three decades, which is physical capital that includes machines, tools, and productive resources. The mentioned resources can be used in combination with human capital (Becker, 1964; Schultz 1961). The physical capital means transformation of materials to make tools, which are used to produce tangible goods; however, human capital is about human capabilities and skills that help finding new ways to do things and create more convenience and economies. Social capital is also about relationship changes among people, which trigger certain actions. In case of perfectly tangible physical capital, it exists in material form, but the human capital isn't tangible because it embodies knowledge and skills that a person acquires. Despite its intangibility, social capital is very useful.

Both human and physical capital result in productive activities; the same is the case with social capital, for instance, groups which exhibit mutual trust have the higher capability to perform as compared those groups, which do not have mutual trust. Thus, both social and human capital forms do not operate in isolation because they are interlinked. Both of them are interrelated in complicated ways, and besides, they support each other. Experts largely view social capital as a source of massive political, social, and economic gains; therefore, its measurement is primarily based on collectivism.

According to Scheffler, Petris, Borgonovi, Brown, Petris, Sassi, and Sirven (2010), increased and improved social capital results in development. On the other hand, human capital is a social wealth consisting of the sum of elements such as interpersonal relations, networks, bonds, communication, assistance, solidarity, values, and trust. Social and human forms of capital are integral as well as complementary to each other. The theoretical framework of social capital has developed based on social network theory. On the other hand, in terms of development, regions

become successful primarily when they have sufficient innovative actors (Educational institutions, research institutes, and public agencies, etc.).

Ultimately, highly educated persons generally enjoy higher social capital levels mainly because their jobs are more flexible; so, they develop strong relations, join associations, and make special interest groups (SIGs), which allow social networking through formal participation.

### 3. Methodology

In order to explore the existence of social and human capital in NBTVE-affiliated hi-tech educational institutions in Libya, which can serve as the main source of development and achieving competitive advantage - an important component of intellectual capital. Human-social capital interconnection leads to organizational success that depends on the relationship between the mentioned variables; so, the methodology for this study was questionnaires to collect the data for both the variables. In the questionnaire, the Likert scale was used, which ranged from "strongly agree," to "strongly disagree" for both the variables. A questionnaire was based on the items, which were measured by Subramaniam and Youndt (2005).

The population size was 2003, out of which, 250 were randomly selected from faculty members. They represent the sample that participated in the study from NBTVE-affiliated technical educational institutions in Libya. Total 250 questionnaires were distributed, out of which, 206 were retrieved, which was 82% of the total questionnaires. Later, 6 of them were rejected due to incomplete data, so practically, 200 (almost 80%) responses were included for statistical processes and analysis. The process was conducted from December 2017 to March 2018.

Demographic questions in the first part of the questionnaire gathered information about gender, age, qualification, scientific specialization, and work experience. Questions about human capital were in the second part, and in the final part, questions about social capital were asked. Each question had five answer choices according to the Likert Scale. For analyzing the answers, statistical software package (SPSS: version 21) was used. The study used descriptive analysis to answer the main question of the research. The reliability of the scales was analyzed by Cronbach's alpha, and to assure the validity of the survey, confirmatory factor analysis was conducted. We applied CFA for analyzing both human and social capital forms because of its quality indicators for conformity of both the variables. We applied Root Mean Square Error of Approximation (RMSEA), according to which, the model-fit values were respectively about 0.047 and 0.008, which indicates that the values were within the good-fit range; so, we can accept it.

The value of Degree of Freedom/Chi-square (DF/CMIN) is a significant indicator that indicates "goodness of fit" because the index values were 1.101 and 1.421 respectively, which were in the range of good-fit values; so, we can accept it. Here, there is relevance between Goodness-of-Fit Index (GFI) and the variable models, which are based on actual field data. Since the index values were 0.956 and 0.977, they were good fit. That means that the model should be accepted.

The Normative Fit Index (NFI) has values 0.962 and 0.945, respectively, which were within the good-fit values' range; so, it indicates good scale quality for both the variables.

Comparative Fit Index (CFI) values were 0.983 and 0.959, respectively, which are given, and it means that they were good-fit values. See Table 1.

Based on these results, it can be said that both human and social capital scales have confirmed its one-dimensional factor structure, and the scales were good-fit. Moreover, reliability indicators show internal consistency of the questions asked from the respondents of the human capital  $\alpha=0.822$ , and the reliability of the social capital scale  $\alpha=0.798$ , which depict sufficient internal as well as statistical consistency. Results given in Table 2 show suitability and reliability of the data collected through questionnaires for analysis because obtained values are well above the acceptability limit of 70%.

Table 1: Validity by Confirmatory Factor Analysis

Fit Measures	HC	SC
RMSEA	0.047	0.008
CMIN/DF	1.101	1.421
GF1	0.956	0.977
NF1	0.962	0.945
CF1	0.983	0.959

Table 2: Reliability by Cronbach's Alpha ( $\alpha$ )

Scale	Items	Cronbach's Alpha ( $\alpha$ )
HC	5	0.822
SC	5	0.798

## 4. Findings

### 4.1. Demographic Characteristics of Respondents

Introducing the background of respondents is very important to make the readers understand the respondents based on their personal information such as gender, age, scientific specialization, qualification, and experience. This information has been shown in the following table to assure better understanding of their backgrounds.

Table 3 summarizes these characteristics. Here, it is important to mention that 85.5% people, who participated in the survey, were men and 14.5% were women while 48% people, who participated in the survey, were between 41 and 50. They were followed by 26.5% respondents, who aged between 30 and 40. Majority of the respondents were 30 and 50-year-old (74.5%), and they had good previous work experience.

Educational qualification is important to understand respondents' educational background, which becomes clear by their last educational degree. Table 3 shows that respondents' majority was master's degree holders (81%) while the remaining 19% had a PhD degree.

It also shows that 50.5% (or 101 out of 200) respondents specialized in managerial, financial, and medical sciences, whereas 49.5% (or 99 out of 200) respondents belonged to tourism, aviation, engineering and other professions. Work experience is also important for the respondents to

understand the questions and respond properly. A majority (54%) of respondents had more than 11 years teaching experience, which shows that a majority of respondents were experienced.

Table 3: Respondents' Demographic Characteristics

<b>Demographic Characteristics</b>	<b>N</b>	<b>%</b>
<b><u>Gender</u></b>		
Male	171	85.5
Female	29	14.5
<b><u>Age</u></b>		
Less than 30 years	25	12.5
From 30-40 years	53	26.5
From 41-50	96	48
More than 50	26	13
<b><u>Qualification</u></b>		
Master degree	162	81
Phd degree	38	19
<b><u>Scientific Specialization</u></b>		
Medical sciences	41	20.5
Managerial and financial sciences	60	30
Tourism	25	12.5
Aviation	32	16
Engineering	28	14
Others	14	7
<b><u>Work Experience</u></b>		
Less than 5 years	33	16.5
5-10 years	59	29.5
11-15 years	73	36.5
More than 15 years	35	17.5
<b>Total</b>	<b>200</b>	<b>100 %</b>

\* Source: Prepared by the researcher based on SPSS outputs

#### 4.2. Findings of Descriptive Statistics of Human Capital

The replies to statements pertaining to human capital were important. Respondents shared their views on the factors that affect human capital of highly technical value. Five statements were listed in the questionnaire.

Table 4 presents the frequency (percentage) and mean values along with the SD of responses against the mentioned statements. Furthermore, the factors were ranked based on mean scores of the responses.

Table 4: Descriptive Statistics of Human Capital

<b>Items of Human Capital</b>	<b>Totally Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Totally Disagree</b>	<b>Mean</b>	<b>Std. Deviation</b>
HC1	57	87	27	19	10	3,81	1.105

	%28.5	%43.5	%13.5	%9.5	%5		
HC2	31 %15.5	80 %40	37 %18.5	38 %19	14 %7	3,38	1.163
HC3	33 %16.5	62 %31	37 %18.5	46 %23	22 %11	3,19	1.270
HC4	31 %15.5	62 %31	37 %18.5	51 %25.5	19 %9.5	3,18	1.242
HC5	28 %14	73 %36.5	49 %24.5	34 %17	16 %8	3,32	1.150

\*HC: Human Capital

It is obvious in Table 4 that the statement: "Our employees are experts in their specific functions and jobs," is the most significant factor (mean value 3.81 and std. 1.105), which represents HC1, followed by the second most influential factor: "In the education sector, our employees are considered as the best" (mean value 3.38 and std. 1.163), which represent HC2.

As per the responses received regarding human capital from the respondents of the technical institutions, the statement: "Our employees develop new ideas and knowledge", has mean value 3.32 and std. 1.150, which represents HC5 in the table and it is perceived as the 3rd most significant factor.

The fourth most influential factor is the statement is: "Our employees are creative and bright", which represents HC3 with mean value 3.19 and std. 1.270. The least influential factor pertaining to human capital is: "Our employees are highly skilled." It represents HC4 with mean 3.18 and std. 1.242. It is obvious from Table 4 that the respondents clearly highlighted shortfalls, which means that human capital deserves more attention in terms of developing skills, initiating training programs, and making efforts to retain and hire employees who have acceptable knowledge, competencies and educational levels.

### 4.3. Findings of Descriptive Statistics Related to Social Capital

The second part of the questionnaire was about social capital. It was aimed at searching for the best method out of five choices to improve social capital for technical education. Table 4.3 presents the responses to this section showing frequency (%), mean, and standard deviation.

Table.5 Descriptive statistics of social capital

Items of Social Capital	Totally Agree	Agree	Neutral	Disagree	Totally Disagree	Mean	Std. Deviation
SC1	34 %17	59 %29.5	38 %19	39 %19.5	30 %15	3.14	1.326
SC2	21 %10.5	78 %39	41 %20.5	42 %21	18 %9	3.21	1.159
SC3	23 %11.5	39 %19.5	33 %16.5	56 %28	49 %24.5	2.66	1.344
SC4	21 %10.5	59 %29.5	44 %22	36 %18	40 %20	2.93	1.303
SC5	18	46	25	66	45	2.63	1.301

	%9	%23	%12.5	%33	%22.5		
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\*SC: Social Capital

Table 5 shows that the respondents emphasized on some possible improvements for increasing social capital efficiency, which is possible through high-tech education. Most significant recommendations were two improvements, as viewed by the respondents. They are as follows:

- Employees should learn from each other and share information, which represents SC2 with mean value 3.21 and std. 1.159.
- Employees should collaborate and consult each other for diagnosing and solving issues, which represents SC1 with mean value 3.14 and std. 1.326. It has moderate approval level.

Moreover, the statement about the employees' support to suppliers, customers, and partners, for facilitation and finding solutions, represents SC4 with mean value 2.93 and std. 1.303. The statement, "Our employees exchange ideas and interact with members of various departments of highly technical institutions," had mean value 2.66 and std. 1.343 that is SC 3. The statement "our employees use knowledge they gain to find solutions to the problems and identify the opportunities," which represents SC5 (with mean value 2.63 and std. 1.301). All these statements (SC 3, 4, and 5) showed agreement with averages below the general average; so it is obvious that mean is substantially lesser than the mean of responses to the questions on human capital.

It is natural that respondents sometimes recommend the least effective ways to develop the overall social capital effectiveness.

This lack of effective social capital leads to reduce human capital efficiency; therefore, SC has the capacity to provide basic knowledge channels for staff to communicate because these relationships help employees exchange and store their knowledge in a formal way whereas the informal channels reduce time/effort for acquiring additional knowledge. Thus, social ties provide employees with the opportunity to respond to management and develop knowledge through shared expertise. They also help developing solutions through alliances and partnerships.

#### 4.4. Finding Correlation Between HC and SC

IC components and their interrelationships, by differently accumulating and mediating knowledge, enable organizations to gain knowledge in distinct ways (Subramaniam and Youndt, 2005). It is clear from Table 6 that the results showed a strong positive HC-SC correlation (0.703\*\*) at 0.01 significance level.

Table 6: Correlation between HC and SC

Variables	Human Capital	
	Social Capital	Pearson Correlation
	P-value	0.000

\*\*Significant relationship at 0.01 level

The human capital-social capital interrelationship is closely related; therefore, informal relations should increase between the group members to increase the accumulation of employees'

knowledge through communication and debate. Also, informal collaboration within organizations improves employees' abilities to learn and perform in the organizational structure (Oh et al., 2006). This explains that human capital in NBTVE-affiliated hi-tech institutions is much higher than the social capital; therefore, it is more effective than the social capital. Basta and Bertilssou (2009) claimed that human capital had the most important effect on the success of the organizations and creation of ideas. Thus, the management of hi-tech educational institutions should initiate recommended ways for improving the social capital effectiveness.

Thus, it seems that the social aspects of individuals are likely to be intrinsic aspects of an organization's human capital (Gratton and Ghoshal, 2003). Social capital links the internal organizational environment with the external environment. Kim and Cannella (2008) proposed that whenever a business environment starts becoming turbulent, directors should focus on creating external ties (Hillman et al., 2000). This helps educational institutions by reducing the uncertainty associated with new strategies because they gain information from the interlocutors who already have experience in implementing that strategy.

Moreover, creating partnerships and alliances help developing higher educational standards and maintaining educational quality through collaboration with other educational institutions. Thus, the fundamental role of internal social capital, when its level is low, intensifies external capital's positive effects, and when its level is up, it must mitigate negative effects of external social capital (Barroso-Castro, Villegas-Periñan, and Casillas-Bueno, 2016).

This makes it clear: If there is lack of informal relations between employees, it leads to reduce the human capital efficiency in the future. Finally, the investment in developing social capital is necessary for reputed educational institutions, which provide basic knowledge channels for staff to communicate and share expertise. It is, therefore, a collaborative effort, and it has a vital role in developing informal relationships.

## 5. Conclusion

Intellectual capital is pivotal for managing knowledge but once it is well managed in terms of its components, it creates remarkable synergies and efficiencies (Wang, Chang, Huang, and Wang, 2011). In this paper, our main findings show that existence of social and human forms of capital varies from organization to organization. Broadly, it can be said that for maintaining their existence, the institutions should focus on human capital. Human capital represents the individuals who act as the most important resources; therefore, investment in education ultimately results in human resource quality and output. On the other hand, experts believe that the social capital comprises of relations among the actors, and specific social structures, which engage certain individuals, who can take or promote significant actions. By improving the social capital, individuals within a structure create beneficial outcomes, enhance their performances, and even contribute to increase the competitive advantage. Thus, lack of social capital efficiency has negative effects on human capital and the educational outcomes mainly because of the two mentioned factors, which are strongly correlated.

It is recommended to pay more attention to human resources, which are considered as an important investment in highly technical education for achieving more quality and development. Finally, for developing the performance of the social capital, the following suggestions are given:

- Informal relationships should be improved by creating organizational climate based on enhancing the employees' performances to gain competitive advantage.
- Participatory decision-making approaches should be developed to promote inclusion of all the stakeholders.
- Training programs should be offered to employees and managers for raising awareness as well as changing their attitudes. Most of the educational programs help building social networks.

An actual choice can only be made if social aspects are a direct part of the analysis. The expected benefits that researchers are looking for should be taken into account. Authors feel that almost in every organization, some factors prevent the process of internal change, or at least make it very difficult; therefore, it is important to locate those factors, and find methods to reduce their impact (IAH Mohamed, 2017).

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