

ACHIEVING COMPETITIVE ADVANTAGE IN TECHNOLOGY BASED INDUSTRY: HOW DEVELOPING INTELLECTUAL CAPITAL MATTERS

Abdirashid Ali Adle

Ankara Yıldırım Beyazıt University

Title: Ph.D. Student

Postal Address: Ankara Yıldırım Beyazıt University, Graduate School of Social Sciences, Çankaya Ankara, Turkey

E-mail: abdirashid@mu.edu.so

Orcid No: <https://orcid.org/0000-0002-9910-3303>

Ömür Akdemir

Ankara Yıldırım Beyazıt University

Title: Professor, Ph.D.

Postal Address: Ankara Yıldırım Beyazıt University, Management Information System Department, Esenboga Ankara, Turkey

E-mail: oakdemir@ybu.edu.tr

Orcid No: <https://orcid.org/0000-0002-6631-1843>

ABSTRACT

The development of high quality human resource leads to an attainment of sustained competitive advantage is a widespread in the management literature and thus, organizations are trying to distinguish themselves on the basis of human resources and intellectual capital as major cause leading to a sustained competitive advantage. In this regard, human resource (HR) systems are acknowledged as the most important mechanism by which companies use to develop their intellectual capital and then, achieve competitive advantage. In this study, a correlation design was utilized to measure the type and the degree of correlation between HR systems, intellectual capital and competitive advantage. The results of the study demonstrate that the practices and systems of human resource management do play a significant role in the development of intellectual capital. In addition, human capital drives an organization's strategic competitive advantage. Additionally, acquisition HR practices were found to be significantly correlated with strategic competitive advantage and thus, the findings partially support that HR systems not only affect competitive advantage through the facilitation of

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intellectual capital, but also represent a direct basis for the achievement of competitive advantage.

Key Words: *Intellectual Capital, HR Practices and Competitive Advantage*

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1. INTRODUCTION

The resource based view has recently shifted the focus of strategic management scholarly research to an organization's resource as strong basis of competitive advantage. Thus, the development of high quality innovative workers leads to a sustained competitive advantage is a widespread in the literature (Macmillan, 1984; Ployhart; Coff & Kryscynski, 2011). Particularly, Intellectual capital, especially in its form of human capital, is considered as a promising ground for the achievement of sustained competitive advantage because it contains tacit knowledge and complexity that cannot be easily imitated by organizations (Coff, 1997). As result, a growing number of organizations are trying to differentiate on the basis of intellectual capital in order to gain a competitive advantage (Bowen, 1988). Additionally, HR systems are widely viewed as a key mechanism through which companies develop their intellectual capital (Chen & Huang, 2009; Collins & Clark, 2003) because HR systems, if effectively managed, play a key role in equipping organizations with the best qualified and innovative workers through training and selective staffing (Youndt and Snell, 2004). In turn, high quality innovative workers help organisations achieve competitive advantage (Hatch & Dyre, 2004).

Therefore, the main questions of this paper are how Somalia's telecommunication and commercial banks can be more competitive by applying HR systems directed at developing valuable human capital? How does the application of HR systems relate to development of intellectual capital? And how competitive advantage can be achieved through the development of intellectual capital? In order to answer these questions, the paper undertakes a review of relevant literature about the role of HR systems in developing intellectual capital and how this turns into the achievement of sustainable competitive advantage. In addition, a hypothesised model (figure 1) was built based on this review and then, empirically tested through an application of regressions analysis using data collected from telecommunication companies and commercial banks in Somalia. From theoretical and practical perspectives, this study is significant for a number of

reasons. First, it contributes to the current literature of strategic management by identifying an effective mediation mechanisms through which the relationship between HR systems and competitive advantage is facilitated. Second, this study will inform organizations about mechanisms through which they can enhance their competitive advantage.

2. CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

2.1 Conceptualization of Key Terms

Intellectual capital has different conceptualizations. Youndt and Snell (2004) operationalized it as three dimensional construct, organizational, human and social capital. Human capital is conceptualized as an aggregate of an organization's level of human capital through the combination of competencies, skills, experiences and the knowledge of its employees (Kor & Leblebic, 2005). On the other hand, Barney (1991) defines social capital as the skills and knowledge embedded in the relationship of employees. Although intellectual capital has many types, in this paper, only the human and social capitals are examined. Synthesizing the discussions, human capital refers to the tacit and not codified knowledge, skills, and expertise that only exist through the minds of individual workers and social capital refers to a shared knowledge and skills that exist only as result of interaction between employees. From this viewpoint, this paper is aimed at analysing how HRM systems enhance the level of intellectual capital and how this turns into an attainment of competitive advantage.

The use of human resource (HR) systems in this paper has two meanings, developmental and participative. Developmental HR systems are the policies and programmes that collectively aimed at developing an organization's human capital which can materialize in two different ways. First, through acquisition such as selective staffing HR system, organizations can acquire a ready-made qualified workers (Shaw, Park, & Kim, 2013). Selective staffing can be explained in terms of intensive and extensive hunt of an existing ready-made human resource. Extensive strategies involve the efforts aimed at widening the sources of recruitment and intensive strategies concerns the application of a combined assessment methods (Youndt & Snell, 2004). Second, organizations can develop the capacity of their human capital through intensive and firm specific trainings (Snell and Dean, 1992). On the other hand, participative HR systems are HR

programmes aimed at increasing employee participation and interaction such as teamwork, less hierarchical structure, employee empowerment, group based incentives and reducing status differences. According to Youndt & Snell (2004), participative HR systems can be conceptualized as egalitarian and collaborative practices. Egalitarian HR practices are all strategies directed at reducing status differences and removing hidden walls so that a free interaction of employees is encouraged. On the other side, collaborative HR practices are all employee-engaging mechanisms that push employees to engage in collaborative efforts.

This paper aims to examine how both types of HR systems correlate with competitive advantage directly and through the mediation of intellectual capital. This approach is more holistic and the aim is to study the aggregate impact of multiple HR systems on intellectual capital and competitive advantage. This holistic approach was selected because it is less likely that a single HR practice has enough measurable effect on the variables of interest in this study. (Youndt, Snell, 2004). Finally, according to Barney (1991), competitive advantage materializes whenever organizations implement a strategy that yields additional value and at same time cannot be easily copied by competing organizations. However, in this paper, competitive advantage is defined on the basis of a strategy and organization’s relative performance situation in a specific industry. Specifically, competitive advantage is operationalized as a strategic performance and financial performance.

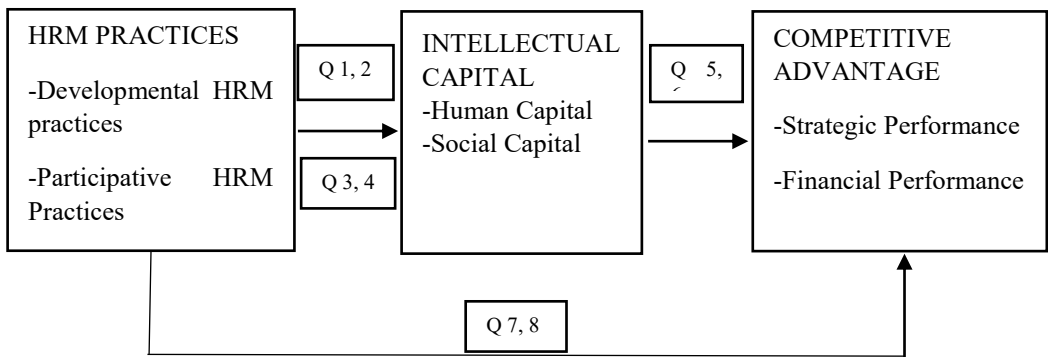


Figure 1: Hypothesised model showing the correlation between HR Practices, Intellectual Capital and Competitive Advantage

3. HUMAN RESOURCE PRACTICES AND INTELLECTUAL CAPITAL

3.2. Human Resource Systems and Intellectual Capital

HR systems such as recruitment, selection, compensation and trainings are extremely crucial to attract and develop a skilled employees (Youndt & Snell, 2004; Swart & Kinnie, 2010). Additionally, these practices can be combined by organizations in a way that cannot be easily imitated by other organizations (Ployhart et al, 2006). Thus, it is widely acknowledged in the literature that HR systems including trainings, recruitment and selection are highly significant for the development of human capital (Lee, 2012; Kong & Thomson, 2009; Collins and Clark 2003). In summary, the HR systems provide organizations a two comprehensive options of either attracting (buying) the existing talents through recruitment and selection strategies or using (making) training and development strategies to develop human capital (Youndt & Snell, 2004). These set of HR systems aimed at developing human capital such as selective recruitment, training and attractive compensation systems are expected to have impact on organization's human capital development. Therefore, the following questions are suggested; Q1: Is there a positive relationship between an organization's acquisition HR system and the level of its human capital? And Q2: Is there a positive relationship between an organization's training HR system and the level of its human capital?

The development of human capital is just one step forward, but it is not a complete picture for intellectual capital to materialize. In this regard, intellectual capital studies suggests that an organization's workers become more valuable when a complex interaction among them is improved through the elimination of communication barriers. In such environment, employees usually share information and knowledge (Coff e tal, 1997). In this regard, there are number of participative HR systems including open communication, teamwork, empowerment and team based-performance compensation which are linked to an attainment of high levels of social capital (Foss, Laursen, and Pedersen, 2011). Social capital-enhancing participative HRM systems create a context where employees and managers can engage in sharing new knowledge and skills and exchange ideas. A significant aspect is an employee empowerment whereby employees are given a certain decision-making ability which leads to higher levels of sharing of knowledge, skill and information among employees (Soo, et al, 2017

and Youndt & Snell, 2004; Shaw, Duffy, Johnson & Lockhart, 2005). Therefore, it is expected the more an organization applies participative HRM systems, the higher its level of social capital will be. As a result, the following questions were generated; **Q3:** Is there a positive relationship between an organization's collaborative) HR systems and the level of its social capital? And **Q4:** Is there a positive correlation between an organization's egalitarian HR systems and the level of its social capital?

Intellectual Capital and Competitive Advantage

Organizations with high knowledgeable workers are the best in terms of engaging in creative decisions that lead to a better organizational competitiveness. As a result, the higher an organisation's level of human capital is, the better its competitive advantage is (Romijn & Albaladejo, 2002; Subramaniam & Youndt, 2005). In this regard, a firm's resources including its human capital can be a promising ground for competitive advantage, especially if it cannot be easily imitated by other organizations (Barney, 1991). There are numerous cases where competitive advantage gained by an organization is attributable to the organization's utilization of employee knowledge, skills, and abilities. Human capital, when it is valuable and hardly to imitate, is very significant foundation of achieving competitive advantage (Hatch & Dyer, 2004). Social capital enhancing HR systems are also linked with an organization's competitive advantage (Subramaniam & Youndt, 2005; Morris & Snell, 2011). Therefore, the following questions are suggested; **Q5:** Is there a positive relationship between human capital and an organization's competitive advantage? And **Q6:** Is there a positive relationship between social capital and an organization's competitive advantage?

3.3. Human Resource Systems and Competitive Advantage

The scholars of strategic management and human resource are not in agreement when it comes to how HR systems and an organization's competitive advantage are related. Some of them argue that HR systems only affect an organization's strategic competitive advantage through the mediation of other constructs such intellectual capital, build-up of organizational competencies, employees mobility constraints and innovative capacity of workers (Youndt & Snell, 2004; Lado and Wilson, 1994; Hatch & Dyer, 2004; Subramaniam & Youndt, 2005). On the other hand, there are number of scholars arguing that HR systems represent a direct basis of competitive advantage (Delery and Roumpi, 2017; MacDuffie, 1995;

Becker and Gerhart, 1996). For instance, according to Delery and Roumpi, (2017), HR systems not only affect an organization's competitive advantage through the development of skills and capabilities of workers, but also it can help organizations to achieve competitive advantage by influencing the employees mobility in terms of labour demand and supply. Therefore, the following questions are proposed; **Q7:** Is there a positive relationship between developmental HRM systems and an organization's competitive advantage? And **Q8:** Is there a positive relationship between participative HRM systems and an organization's competitive advantage?

4. METHOD

4.1. Research Design and Sample

An explanatory correlation design was utilised to explain the type and the degree of correlation between HR systems, intellectual capital and competitive advantage. The explanatory research design is usually applied by the researchers when the purpose of undertaking a particular research is to identify how a change in one or more variables predicts changes in other variable (Creswell, 2012).

4.2. Participants and Procedures

The target population of this study was the presidents, general managers and HR managers of Somalia's technology-based service industry, specifically telecommunication companies and commercial banks. A proportionate stratified random sampling is used in the study (Creswell, 2012). A sample of 70 out of 147 persons was planned to participate in the study. A link of questionnaire with a cover letter was mailed to a sampled 70 persons representing different levels of management in each of the companies. 41 managers responded, representing 55 % percent of response rate.

4.3. Measures

Intellectual capital was conceptualized as a two-dimensional-construct, human and social capital. *Human capital* was measured through the use of five items measurement scale. Similarly, *social capital* was measured through the use of five items measurement. All items were taking from the work of Youndt and Snell (2004). They conducted confirmatory factor loading analysis and the resulting two factors, human and social capital, explained 51 % of total variance and showed average commonality of around .67. *HR systems* were conceptualized as

developmental and participative HR practices. *Developmental HR systems* were measured using thirteen scale items originally developed by Snell and Dean (1992) and further revived by Youndt et al. (1996). Likewise, *participative HR systems* were measured through the use of thirteen items taken from Youndt and Snell (2004). Finally, *competitive advantage* was measured using six item scale adapted from Schilke (2014) who developed these items based on the original work of Weerawardena (2003). Finally, all measurement items and its scale were validated through face validity and pre-testing. First, the measurement items were shared with the number of Somali professors who checked its relevance to the local context and culture. Second, the questionnaire was translated from English to Somali language and then was back-translated into English with the help of two bilingual experts. Lastly, all measures and items are combined in to a single questionnaire and five-point Likert scale was adapted measuring participants' level of agreement or disagreement with the measurement item (1 = strongly disagree; 5 = strongly agree).

4.4. Analysis

The correlation analysis was applied to answer all questions using the SPSS packet program. This type of analysis was applied to examine the relationship between HR systems and intellectual capital in one hand and intellectual capital and competitive advantage on the other hand.

5. FINDINGS

The results of the study were reported based on the research questions under three main categories, HR practices and intellectual capital, intellectual capital and competitive advantage and finally, HR practices and competitive advantage. For more details about the correlations between the variables of the study, see (Table 1, Table 2, Table 3 and Table 4).

5.1. HR Systems and Intellectual Capital

To examine whether HR systems positively correlated with intellectual capital, a correlation analysis was utilized and the result is indicated in Table 1. In this regard, question 3 examined whether there is a positive correlation between collaborative HR systems and the level of firm's social capital and as expected, collaborative ($r = .335, \rho < .05$) HR practices were significantly correlated with a firm's social capital. Similarly, question 4 examined whether there is a positive

correlation between egalitarian HR systems and the level of firm’s social capital. However, egalitarian HR systems were found not significantly correlated with a firm’s level of social capital and thus, the results did not provide support for question 4. On the other hand, although developmental HR systems, acquisition and training, were all positively correlated with an organization’s human capital, it was found the relation between the two as weak rather than significant and thus, there is no strong support for question 1 and 2. Although not hypothesised, developmental HR systems, acquisition ($r = .364, \rho < .05$) and training ($r = .319, \rho < .05$) were positively and significantly correlated with the level of organization’s social capital.

Table 1: Results of HR Practices and Intellectual Capital Correlation Analysis

Variables	Social Capital	Human Capital
Collaborative HR Practices	.335* (.032)	.139 (.387)
Acquisition	.364* (.019)	.234 (.140)
Training	.319* (.042)	.238 (.124)

* $\rho < .05$

** $\rho < .05$

5.2. Intellectual Capital and Competitive Advantage

To examine the relationship between intellectual capital and an organization’s competitive advantage, a correlation analysis was used and result is indicated in the Table 2. In this regard, human capital ($r = .33, \rho < .05$) was found to be significantly correlated with an organization’s strategic financial performance. This means the higher an organization’s human capital is the higher its financial performance is and this is not only statistically significant, but also practically important. On the other hand, social capital were found not significantly correlated with an organization’s competitive advantage and thus, no statistically significant support was found for question 6.

Table 2: Results of intellectual capital and competitive advantage correlation analysis

Variables	Strategic Performance	Strategic Financial Performance
Human Capital	.015 (.920)	.330* (.035)
Social Capital	.086 (.0592)	.284 (.072)

* $\rho < .05, \quad **\rho < .05$

5.3. Human Resource Systems and Competitive Advantage

Finally, to examine the relationship between HR practices and competitive advantage, once again correlation analysis was applied and the result is shown in Table 3.

Table3: Results of Intellectual Capital and Competitive Advantage Correlation analysis

Variables	Strategic Performance		Strategic Financial Performance	
Acquisition	.636**	(.019)	.457**	(.003)
Trainings	.265	(.094)	.205	(.190)
Collaborative	.199	(.213)	.209	(.190)
Strategic Performance	-		.524**	(.000)

* $\rho < .05$, ** $\rho < .05$

The questions 7 and 8 assumed a positive correlation between developmental and participative HRM systems and an organization's competitive advantage. In this regard, developmental HR system, acquisition ($r = .636$, $\rho < .05$) was significantly correlated with an organisation's strategic performance. In similar vein, acquisition ($r = .457$, $\rho < .05$) was significantly correlated with an organization's financial performance and thus, the results provide strong partial support for question 7. However, participative HR systems (egalitarian and collaborative) were found not significantly correlated with an organization's strategic performance and thus, results indicate no support for question 8.

Table 4: Results of all inter-correlation analysis

Variables	1	2	3	4	5	6	7
1. Acquisition	-						
2. Trainings	.447**	-					
3. Collaborative	.326*	.622**	-				
4. Human Capital	.234	.238	.139	-			
5. Social Capital	.364*	.319*	.335	.587**	-		
6. Strategic Performance	.636**	.265	.199	.016	.086	-	
7. Financial Performance	.457**	.205	.209	.330*	.284	.524*	-

* $\rho < .05$, ** $\rho < .05$

6. DISCUSSION AND CONCLUSION

In general, this study supplies a reliable support that HR systems and practices are essential in the development of intellectual capital. Although developmental HR systems were insignificantly correlated with human capital, moderate correlations

may not misleadingly reach significance due to the small sample size which is the case in this study. Thus, the study provides somehow a consistent support for the previous studies in which acquisition HR systems aimed at attracting best qualified employees and HR efforts aimed at training and developing an organization's workers correspond to the level of an organization's human capital. Therefore, this study is consistent with earlier studies that HR systems are fundamental in developing human capital (Youndt & Snell, 2004; Swart & Kinnie, 2010; Collins and Clark 2003; Lee, 2012; - et al, 2017).

On the other hand, participative HR practices were found to be significantly correlated with an organization's social capital and thus, the study provides a consist support for the findings of previous studies that collaborative HR practices aimed at selecting workers with strong ability to collaborate in teams, promoting teamwork, reducing communication parries and utilising group based incentives were all correlated with an organisation's level of social capital. As such, this study is in line with the findings of a previous studies (Foss, Laursen, and Pedersen; Soo et al., 2017; Youndt and Snell, 2004). For instance, Foss, Laursen, and Pedersen (2011) found that HR systems including open communication, team work, empowerment and team based-performance compensation lead to an attainment of high levels of social capital by encouraging workers to exchange ideas and learn from one another. However, this study found no significant correlation between egalitarian HR systems and an organization's social capital and as such, it is consistent with the findings of a study conducted by Youndt and Snell (2004) who found that egalitarian HR practices were not correlated with the level of an organization's social capital. Although not hypothesised, interestingly and unexpectedly, the study found that acquisition and training HR systems were significantly correlated with an organization's social capital and this, suggests that developmental HR systems not only form strong basis for developing an organization's human capital, but also supports the attainment of social capital.

The analysis of the study did not reveal a significant correlation between social capital and an organization's competitive advantage. The reason that the correlation between these two terms became statistically non-significant might be because of the significant correlation of social capital with human capital and developmental (acquisition and training) HR systems. Thus, it seems a reasonable the acquisition and training HR systems are the key mechanisms through which organizations can develop their human capital and in turn, human capital

establishes strong fundamental base for the achievement of strategic competitive advantage. Therefore, the study found that human capital is significantly correlated with an organization's competitive advantage, particularly an organization's strategic financial performance. This suggests that the investments made by organizations to increase their human capital, in turn, translate into a high level of return on sales (ROS), return on investment (ROI) and market share. Furthermore, the correlation of human capital and competitive advantage are not only statistically strong, but also are practically significant for organizations as it shows a clear connection between an organization's intellectual capital and the achievement of competitive advantage. Thus, the findings of the study reinforce that organizations with the most qualified workers are the best in terms of achieving strategic competitive advantage. Accordingly, the result of the study bears close resemblance to the findings of the previous studies (Subramaniam & Youndt, 2005; Hatch & Dyer, 2004; Barney, 1991). For example, Barney (1991), founded human capital as significant basis of sustainable competitive advantage.

With regard to the relationship between HR systems and strategic competitive advantage, only acquisition HR systems were found to be significantly correlated with an organisation's strategic performance. This suggests that an organization's investment in human capital, to attract the best workers, leads to the achievement of competitive advantage. Therefore, the results partially support the opinion of strategic human resource scholars arguing that HR systems are significant basis for the achievement of competitive advantage (MacDuffie, 1995). However, as the most HR systems, trainings and development, collaborative and egalitarian, were all found not significantly correlated with an organization's competitive advantage, the study also significantly supports the notion that HR systems improve an organization's strategic competitive advantage mainly through the development of employee capabilities and knowledge. This notion is argued by many scholars including Youndt & Snell (2004) who found that HR systems mainly affect organizational performance through the mediation of social and human capital.

In conclusion, the result of regression analysis reported in the Table 1 and Table 2 leads to three fundamental conclusions. First, it provides a clear demonstration that HR systems play a significant role in the development of social and human capital by equipping organizations with the best qualified workers either through selective staffing or through development and training and by increasing transfer

of skills and knowledge sharing among employees through collaborative HR practices. Second, intellectual capital, particularly human capital, not only positively affects an organization's competitive advantage, but also represents a key mechanism through which HR systems can positively affect a firm's strategic performance. Third, the study provides organizations a practically relevant knowledge that they can apply to invest their HR systems in a way that increases the capacity of their workers and then, utilise them to achieve and sustain their competitive advantage.

Finally, like any other study, this study is subject to limitations. First, this paper addresses HR systems as a bundle and this diverted the attention from addressing a single HR practice which may be particularly relevant to the intellectual and competitive advantage. In addition, there may be other organizational activities that affect an organization's social and human capital and competitive advantage, but were not focused in this study. Thus, future research may consider the role of single HR practice or other organizational aspects in the development of human capital and competitive advantage. Second, the sample size was not large. Therefore, future studies should consider a large sample size in order to reach statistical significance. Third, correlation analysis was applied and thus, the mediation of intellectual capital was not effectively addressed. Future studies should consider more appropriate advanced multivariate analysis such as multiple regression analysis and structural equation modelling to examine the mediating role of intellectual capital. Fourth, in the context where there is no regulations that make the disclosure of financial statements mandatory, the data about the financial performance of the companies may not be accessible. Therefore, to measure an organization's return on investment, sales and its market share and then, to relatively compare these results to other competing companies are extremely difficult. Thus, future studies should consider these difficulties and discover appropriate ways to measure competitive advantage in similar contexts. Fifth, HR managers, finance managers and general managers participated in this study. In some contexts, these people may not have access to an organization's strategic performance and only very few senior managers may have the capacity to access this information. Therefore, it is recommended that future studies focus on top managers such as presidents and CEOs to get the most accurate and reliable data about an organization's strategic performance.

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