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LINKING HUMAN CAPITAL TO INNOVATION CAPABILITY: A DYNAMIC CAPABILITIES PERSPECTIVE

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Abstract

The research examines the mediating role of dynamic capabilities in the effect of human capital on innovation capability. The research was conducted with white-collar employees in a logistics company based in Istanbul. A simple random sampling technique was used to determine the sample. The research sample is 238 employees working in the same company for at least three years. Mediation models were used to analyse the data. The data analysis determined that employee capital significantly increases the company's dynamic and innovation capabilities. In addition, the company's dynamic capabilities mediate in forming the innovation capability of employee capital. The hypotheses created within the scope of the research were supported. Human capital companies' dynamic capabilities effectively form the company's dynamic capabilities and subsequently obtain innovation capabilities. The research contributes to the literature by associating employee capital, innovation capability, and dynamic capabilities in the logistics sector.

Keywords: Human Capital, Dynamic Capabilities, Innovation Capability, Logistics Industry.
JEL Classification: L1, L2.

İNSAN SERMAYESİNİ İNOVASYON YETENEĞİNE BAĞLAMAK: DİNAMİK YETENEKLER PERSPEKTİFİ

Öz

Araştırmanın amacı, insan sermayesinin inovasyon yeteneğine etkisinde dinamik yeteneklerin aracılık rolünün incelenmesidir. Araştırma, İstanbul merkezli bir lojistik firmasındaki beyaz yakalı çalışanlarla gerçekleştirilmiştir. Örneklemin belirlenmesinde basit tesadüfi örnekleme tekniği kullanılmıştır. Araştırmanın örneklemi en az üç yıldır aynı firmada çalışan 238 çalışandır. Verilerin analizinde aracılık modelleri kullanılmıştır. Verilerin analizi sonucunda insan sermayesinin firmanın dinamik yetenekleri ve inovasyon yeteneğini önemli düzeyde arttırdığı tespit edilmiştir. Ayrıca firmanın dinamik yetenekleri, insan sermayesinin inovasyon yeteneğinin oluşmasında aracılık rolüne sahiptir. Araştırma kapsamında oluşturulan hipotezler desteklenmiştir. İnsan sermayesi firmaların dinamik yetenekleri, firmanın dinamik yeteneklerinin oluşmasında, sonrasında inovasyon yeteneklerinin elde edilmesinde etkilidir. Araştırma, lojistik sektöründe insan sermayesini, inovasyon yeteneği ve dinamik yetenekleri ilişkilendirerek alanyazına katkı sunmaktadır.

Anahtar Kelimeler: İnsan Sermayesi, Dinamik Yetenekler, İnovasyon Yeteneği, Lojistik Sektörü.
JEL Sınıflandırması: L1, L2.

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1. INTRODUCTION

In recent years, the research agenda on human capital (HC) contributions to firms has begun to see HC as an important antecedent of firms' competitive advantage (Buenechea-Elberdin et al., 2017). HC is considered a factor that increases companies' awareness of opportunities and their level of innovation (Shane and Venkataraman, 2000). In addition to helping firms obtain important knowledge, HC facilitates business sustainability (Giudice et al., 2017). HC, defined as knowledge and skills, can be vital for a firm seeking innovation and improving competitiveness (Wright et al., 2014). Especially in developing economies and SMEs, HC can contribute to the firm's acquisition of talents and innovation capabilities (IC), along with the performance of employees (Donate et al., 2016; Liu et al., 2020). Examining the contribution of HC to the company, Mangematin and Nesta (1999) argue that employees with high abilities increase the company's knowledge stock, especially through their daily duties. It is also argued that these employees are active in networks outside the company and help bring outside information to the company.

Although there is a research agenda on the contributions of employees' savings to companies, how these savings affect companies' sources of competitive advantage is still a matter of debate. Innovation capabilities (IC) and dynamic capabilities (DC), which are the most important sources of competitive advantage (Teece et al., 1997; Eisenhardt and Martin, 2000; Wang and Ahmed, 2007), are linked to HC (Liu et al., 2020) and the decision-making mechanism of managers (Teece, 2007; Teece, 2018) is associated. According to the research results, human resources (at different levels) are the source of the company's dynamic and IC. Employees' knowledge and abilities contribute to their ability to innovate by increasing the company's entrepreneurial capital (Buenechea-Elberdin et al., 2017).

While some researchers use HC to explain how knowledge and skills transform into IC, they focus on employees' success in cognitive-based jobs. They argue that employees contribute to IC using their cognitive abilities (Fonseca et al., 2019). Youndt et al. (1996) again base HC largely on knowledge and expertise and state that it can be a strategic resource when positioned correctly.

However, in research conducted on DC and IC, the focus is generally on factors at the firm level and the level of top management teams. However, the contribution of general human resources in companies to dynamic and IC has yet to be investigated. As stated by Fallon-Byrne and Harney (2017), looking at dynamics and IC from the top management perspective makes it easier to identify micro-foundations. However, the truth is that; Companies do not consist only of top management teams and other fixed resources of the company. Other employees are the implementers of the strategic decisions made by the top management. How employees not in top management contribute to dynamic and IC has yet to receive enough attention in the literature.

Analyzing the logical relationships between DC and IC and determining the impact of HC on DC and IC can make a modest contribution to the gaps and debates in the literature. Therefore, the research aims to determine as determining the role of DC in the impact of HC on IC.

The research's findings will likely be useful in explaining how the skills and knowledge of employees in SMEs affect DC and how DC contributes to SMEs' IC. Additionally, embedded in the research, relational gaps will be filled by establishing relationships between DC, IC, and HC. Our findings contribute to the controversial literature by identifying these relationships.

2. CONCEPTUAL AND THEORETICAL FRAMEWORK

The research's conceptual and theoretical framework section explains the concepts of HC, DC, and IC. Based on the relationships between these concepts, hypotheses are then developed.

2.1. Human capital

Competency levels, IQ levels, professional qualifications, education levels, personality traits, etc., of all employees employed by an institution. Questioning whether an employee will be considered capital is related to how optimal the consolidation of these parameters is (Farah and Abouzeid, 2017; Çakmak, 2021). Human capital "Is the sum of employees' concrete knowledge, skills and motivation" (Edvinsson and Malone, 1997; Chen et al., 2015). According to Drucker (1993), "*human capital is a source of creativity for organizations*". New products can be created with human capital. Human capital is the characteristics that include sectoral, professional, management and previous experience (Ployhart et al., 2011; Tsou and Chen, 2020). Human capital is embedded in business processes (Grant, 1996).

Human capital is viewed as a unique resource in responding to changing environmental conditions (Wright et al., 2001). The human capital organization is characterized by efficiency and inimitability. For HC to be useful, it must be well integrated into business processes. Employees integrated into the most appropriate tasks can provide strategic effects for the company (Kor and Leblebici, 2005; Wang et al., 2001). The individual uniqueness of employees, creating a new learning process by adapting them to business processes, and developing employees' skills specific to the organization are the factors that enable employees to become inimitable (Kaplan and Norton, 2004; Wright et al., 2001; Tsou and Chen, 2020; Wang et al., 2011).

2.2. Dynamic Capabilities

The resource-based approach argues that firm resources and heterogeneity are important fundamental elements of sustainable competitive advantage (Barney, 1991). However, today, it is argued that the resource-based approach needs to be revised due to the dynamic and turbulent business environment (Teece et al., 1997). The DC approach was introduced to examine how companies react to market changes with high dynamism (Winter, 2003). DC is "the firm's ability to integrate, build and reconfigure internal and external competencies to adapt to rapidly changing environments" (Teece et al., 1997). According to another definition, "*DC are high-level capabilities that enable the development of the company's operational capabilities"* (Winter, 2003; Helfat et al., 2007).

Wang and Ahmed (2007) define *DC* as "*the firm's continuous renewal and restructuring of its resources and capabilities in response to changes in the environment to maintain competitive advantage*" (Wang and Ahmed, 2007). According to another definition, *DC* is "*the appropriate adaptation, integration and restructuring of internal and external organizational skills, resources and functional skills in line with the needs of the changing environment*" (Teece et al., 1997). DC is "*the process of sensing changes in the environment, seizing opportunities and restructuring resources/capabilities*" (Eisenhardt and Martin, 2000). Although there are different definitions, the general emphasis in DC definitions is the firm's ability to perceive changes in the external environment, capture them, and restructure its resource base. At the same time, many researchers in the field and Teece (2007) explain DC in three dimensions: sensing, seizing and reconfiguring. Sensing capability is "the scanning process of attracting irregular information and unstructured data from the external environment to the organization" (Teece, 2018). Seizing capability evaluates perceived opportunities "*through new products, processes or services*". The emphasis on seizing opportunities links the ability to capture with continuous research and development (Teece, 2007). Reconfiguring is "*integrating assets and organizational structures to align the firm's internal processes with captured opportunities*"

(Teece, 2018).

2.3. Innovation capability

Innovation, defined as the production, adoption and implementation of new ideas, processes, products or services (Calantone et al., 2002), is the basis of economic development (Thompson, 2018). Innovation capability is conceptualized as the potential to create new and valuable products or information (Zheng et al., 2010; Saunila, 2017). The firm's IC is important for competitive advantage in dynamic market conditions (Slater et al., 2010). It is embedded in firm processes and related to its assets (Guan and Ma, 2003). According to Adler and Shenbar (1990), IC is (1) developing new products to meet the needs of the market, (2) applying new business technologies to produce these new products and services, (3) developing technologies and products to meet future market needs, (4) reacting to unexpected opportunities presented by competitors (Rajapathirana and Hui, 2018). Hii and Neely (2000) argue it is the "potential to generate new ideas, identify new market opportunities and implement marketable innovations by leveraging existing resources and capabilities".

While some studies consider IC "output/performance, others consider it as capabilities that produce output or performance results" (Rubera and Kırca, 2012; Yeşil and Doğan, 2019). According to a more comprehensive definition, IC is "*the ability to continuously deliver innovative services and products through organizational capabilities, capacities and competencies*" (Momeni et al., 2015). Romijn and Albaladejo (2002) argue that internal and external resources are needed to ensure innovation. Internal resources of the organization while materials and materials include factors such as the professional background of managers/owners, skills of the workforce, internal efforts to develop technology, external resources, institutional support, strong collaborations and network density (Yeşil and Doğan, 2019; Najafi-Tavani et al., 2018).

2.4. Relationships between HC, DC and IC

Many studies have been conducted at the company level on forming IC and innovation. Most of these studies need to clearly emphasize the role of the human element in forming IC. This approach to IC prioritizes the mechanical properties of organizations. However, it is a known fact that the top management mechanism in companies makes strategic decisions. The subordinates carry out the implementation of the decisions of the top management. The interest in the factors that make strategic decisions fully realized by subordinates is not intense enough. It is, therefore, important to understand the role of human resource characteristics (e.g., HC) in building the firm's IC and the role of HC in building DC embedded in social relationships and routines. From such a perspective, how HC transforms into innovation is examined.

Relationships between HC and DC: Companies can solve problems and produce new knowledge thanks to talented employees. In addition, people are the ones who motivate companies to perceive the need for change and accordingly update their resource base (Nieves and Haller, 2014; Elsharnouby and Elbanna, 2021). Employees other than senior management can also provide information to the company as they will communicate with customers, suppliers and other external environments (Elsharnouby and Elbanna, 2021). With this information, companies can perceive environmental developments, determine the need for change and update their resource base. Fallon-Byrne and Harney (2017) attribute the development of DC to successful strategic human resources management. Researchers argue that with strategic human resources, it is possible to create routines compatible with the creativity and innovation of talented and highly motivated employees, thus creating DC and realizing innovation. Chatterji Patro (2014) calls the role of human resources in developing dynamic talents a structure that starts from the recruitment process of human resources. Wang et al. (2012) see HC as important in terms of developing DC and being a resource that competitors cannot

imitate. According to the authors, HC is an element that develops the company's core competencies and ensures the company's restructuring according to the environment. As seen from the literature summary, HC is expected to contribute positively to DC. Therefore, the hypothesis created is as follows;

H_1: HC positively affects DC.

Relationships between DC and IC: It is argued that companies need to develop their IC through their DC (Pisano, 2017). Well-established DC is necessary for the firm to realize innovation (Rothaermel and Hess, 2007). IC is built on DC in this form, increasing adaptability (Parashar and Singh, 2005). Innovation becomes easier through harmony. In this respect, DC is considered a prerequisite for IC (Breznik and Hisrich, 2014). Vorntis et al. According to the research findings (2020), DC and networks between companies are important in companies with high IC. Thus, one of the premises of IC is that the company scans the environmental developments, renews its resource base and increases its relations with stakeholders. According to another view (Giniuniene and Jurksiene, 2015), DC improves the firm's IC by increasing organizational learning. It is so that the company's ability to sense and capture the developments in the external environment and restructure its resource base enables the company's learning process to occur and the company's IC to improve. Ellonen et al. (2011) argue that DC (sensing, capturing and restructuring) directly affects the innovation skills of the firm. In summary, DC is expected to increase IC. Therefore, the hypothesis created is as follows;

H_2: DC positively affect IC

Relationships between HC and innovation: Some researchers argue that human skills have a partial role in developing IC. It is thought that human skills are integrated with processes, and their skills lead to the emergence of innovation (Gardner, 2005; Thrassou et al., 2018; Vorntis et al., 2020). Lawson and Samson (2001) state that the company's IC improves as a result of the combination of small ideas of many employees. According to Leoard-Barton (1992), the tacit knowledge acquired by highly skilled employees over time can become a source of innovation for companies. On the other hand

Employee competencies and the development of these competencies are important in accepting or implementing innovations. Moreover, the improved competencies of employees can prevent resistance to implementing innovations (Piening and Salge, 2015). The creative nature of HC is thus expected to increase the firm's IC. Therefore, the hypothesis created is as follows;

H_3: HC positively affects IC.

The mediating role of DC: Companies identify problems and developments in the environment based on the knowledge and experience of their employees. The best solutions to identified threats and opportunities are an output of HC. These skills of employees help the firm update its resource base and create learning that the firm can use in the future (Augier and Teece, 2009; Kale and Singh, 2009). In other words, the employee's abilities contribute to forming and developing the company's DC (Teece, 2007). In order to respond to changes in the environment, the company must constantly seek, discover and implement new opportunities in the company (Eisenhardt and Martin, 2000; Teece, 2007). While this process ensures the formation of DC, it also improves innovation skills (Hii and Neely, 2000; Breznik and Hisrich, 2014). Thus, the company's DC can turn into an element that enables the development of the company's IC. In summary, developed HC enables the formation and strengthening of the company's DC, and good levels of DC increase the company's ability to innovate. Therefore, the hypothesis created is as follows;

H_4: DC have a mediating role in the effect of HC on IC.

3. METHOD

3.1. Data collection

The study used HC, DC, and IC scales and demographic questions to collect data. The IC scale used in the research was taken from Lee and Song (2015) and Shou et al. (2017), developed by Yang (2016). The scale includes five items and a single dimension. The scale used to measure DC consists of 18 items and three dimensions. DC scale Torres et al. (2018) and Teece (2007), and its Turkish form was adapted by Tatlı (2022). HC scale Youndt et al. (2004) and translated into Turkish by Damar and İraz (2020). The measurement tool includes five items and a single dimension. The scales were used as a 5-point Likert measurement in the survey form (1-strongly disagree / 5-strongly agree). In addition to the measurement tools, participants were asked six demographic questions (age, gender, etc.). Approval was received from the Istanbul Beykent University Social Sciences Ethics Committee dated 15.09.2023 and numbered 118716 for the suitability of the data collection tools.

3.2. Research sample

The research population consists of white-collar employees of a logistics company operating in Istanbul. The research sample consists of employees working in the company in question and working in the same company for at least three years. DC are not structures easily seen in the company (Teece, 2007). Data obtained from new employees may yield unreliable results. Therefore, data collection was carried out from white-collar personnel who had been working in the company for at least three years. A simple random sampling technique was used to determine the sample. Thus, each employee has an equal chance of participating in the research. During the data collection process, an online survey form was sent to 450 employees of the logistics company who have been on duty for at least three years. Positive responses were received to 266 survey forms sent between September and October 2023. The answers of 6 participants who systematically gave only one answer to the survey were considered invalid.

Additionally, the number of employees working for less than three years was determined to be 22, and they were excluded from the research. Finally, the analysis process was started with 238 suitable data. When the general demographic characteristics of the participants are examined, 40.3% are 30 years old and under, 47.5% are 31-40 years old, and 12.2% are 41 years old and over. 48.5% of the participants are women and 51.5% are men. 48.5% of the participants have undergraduate education, 47.7% have master's degrees, and 3.8% have doctoral-level education. 16.5% of the participants have been abroad for any reason, and 83.5% have not been abroad. 46.7% of the participants have worked at the same workplace for 3-6 years, 48.9% for 7-10 years, and 4.5% for 11 years or more. While 14.3% of the participants have a management position, 85.7% do not have a management position.

3.3. Conceptual model

According to the research's conceptual model, HC constitutes the independent (x) variable, DC constitutes the mediator (m) variable, and IC constitutes the dependent variable (y). Solid arrows represent direct effects, and dashed arrows represent the mediating role.

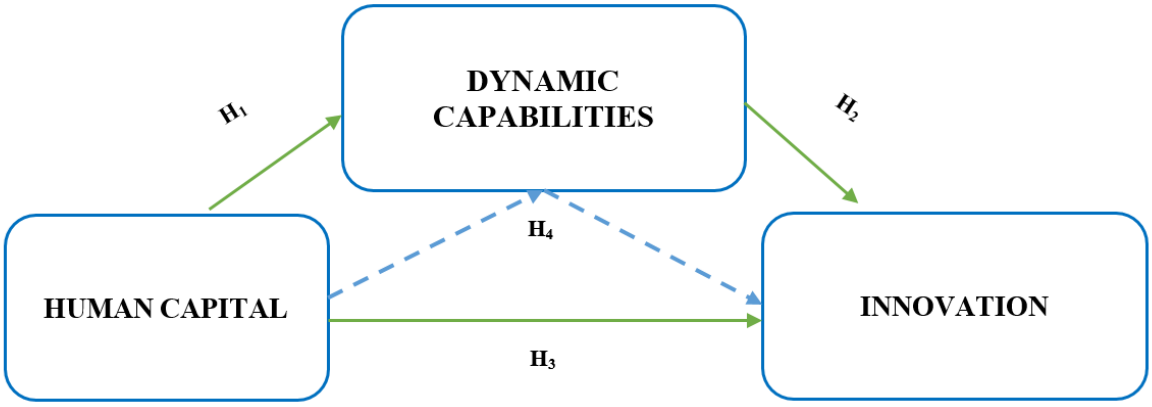

Figure 1. Conceptual model

3.4. Analysis of data

The SPSS 25 package program and SPSS Process 2.16.3 macro were used to analyze the data. The SPSS 25 package program performed factor analysis, reliability analysis, and correlation analysis. Hair et al. (2014), frequently used in the literature, were used as the basis for carrying out factor and reliability analysis.

Hair et al. (2014), frequently used in the literature, were taken as the basis for evaluating the factor and reliability analysis results. The limit values in question are as follows: KMO = 0.60/0.70 and above, Bartlett's Test of Sphericity = $p < 0.05$, explained variance = 60% and above, Cronbach's Alpha coefficient = 0.60/0.70 and above, factor load = 0.40 and above.

In order to perform Pearson correlation analysis, normal distribution tests must first be performed. Kolmogorov-Smirnov and Shapiro-Wilk tests are performed as normal distribution tests. In cases where normal distribution is not achieved, skewness and kurtosis values are examined. Skewness and kurtosis values between -1.5/1.5 are sufficient to assume a normal distribution (Tabachnick and Fidell, 2013; George and Mallery, 2011; Uysal and Kılıç, 2022). Since the skewness and kurtosis values are within the mentioned limit range (-1.137/0.695), the data is assumed to provide a normal distribution. Commonly used limit values (Karahan, 2017; Kocaay et al., 2022) were used to evaluate the results of the Pearson correlation analysis. According to these criteria: 0: no relationship, 0.01-0.19: very low relationship, 0.20-0.39: low relationship, 0.40-0.59: moderate relationship, 0.60-0.79: high level of relationship, 0.80-0.99: very high relationship, 1: complete relationship.

The bootstrap method was used to determine the mediation role. According to many researchers, the Bootstrap method gives more reliable results than the traditional method of Baron and Kenny (1986) (Gürbüz, 2019; Hayes, 2018). The test of the mediation model was carried out through model number 4 in the Process Macro developed by Hayes (2018). During the analysis, 5000 bootstrapping was preferred. In mediation tests conducted with resampling, the confidence interval (CI) value is used instead of the p-value. When the resampling technique is used, the 95% confidence interval values should not include 0 (Gürbüz, 2019; Hayes, 2018). The simple mediation model (model 4) used in the research is presented in Figure 2. The figure includes x (independent variable), y (dependent variable) and m (mediator variable).

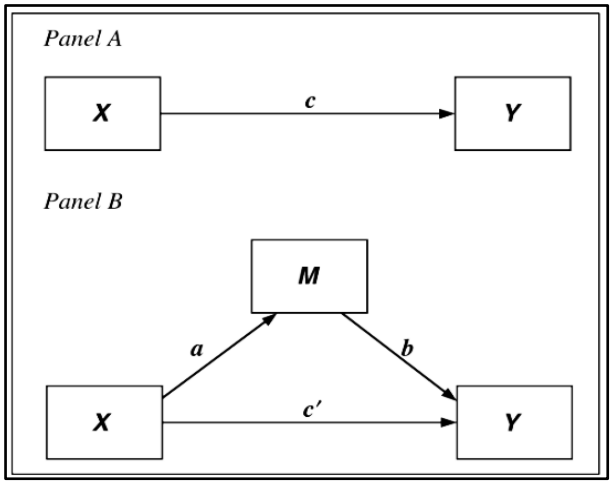

Figure 2. Simple mediation model

In Figure 2, panel A represents path c, showing the effect of the independent variable on the dependent variable (total effect). Panel B contains the paths a, b and c'. Path A shows the effect of the independent variable (x) on the mediator variable (m). Path B shows the effect of the mediator variable (m) on the dependent variable (y). Path C' shows the effect (direct effect) of the independent variable (x) on the dependent variable (y). In summary, it is expressed as c = total effect, a.b = indirect effect, c' direct effect, c = c'+ (a.b) (Gürbüz, 2021; Preacher and Hayes, 2004; Hayes, 2018).

4. FINDINGS

This section of the research includes the findings of the research. First, factor and reliability analysis, then correlation analysis and descriptive statistics, and finally, mediation analysis findings are presented.

Table 1. Factor and reliability analysis

KMO and Bartlett's Test		**DC**	**IC**	**HC**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,939	,871	,887
Bartlett's Test of Sphericity	Approx. Chi-Square	3067,044	959,601	779,799
	df	153	10	10
	Sig.	,000	,000	,000
Total variance		68,442	77,951	74,026
Reliability Statistics	Cronbach's Alpha	,951	,929	,912
	N of Item	18	5	5

Factor analysis and reliability analysis results of DC, innovation and HC scales are given in Table 1. The KMO value of the DC scale is 0.939, Bartlett's test is significant ($p<0.05$), the explained variance is 68.44%, the reliability coefficient is 0.951, and the number of items in the scale is 18. The KMO value of the innovation scale is 0.871, Bartlett's Sphericity test is significant ($p<0.05$), the explained variance is 77.95%, the reliability coefficient is 0.929, and the number of items is 5. The KMO value of the HC scale is 0.887, Bartlett's Sphericity test is significant ($p<0.05$), the explained variance is 74.02%, the reliability coefficient is 0.912, and the number of items is 5. It was determined that the measurement tools had factor and reliability values above the limit levels and were suitable for use in the research. In addition, it was determined that the DC scale has three dimensions, as in the original scale, and each item has a factor loading of over 0.40.

Table 2. Correlation analysis

	$\bar{x}$	σ	DC	HC	IC
DC	*3,8632*	*,72935*	1		
HC	*3,7387*	*,85058*	,673**	1	
IC	*4,0286*	*,86636*	,512**	,586**	1

**. Correlation is significant at the 0.01 level (2-tailed).

N:238

Table 2 includes relationships between variables and descriptive statistics. According to the findings, there are high and significant relationships between HC and DC, moderate and positive relationships between HC and IC, and moderate and positive relationships between IC and DC. In addition, employees' perception of DC and HC is medium, and their perception of innovation is high.

Table 3. The mediating role of DC in the effect of HC on IC

	Output variable					
	M(DC)			Y(IC)		
Predict variable		β	SE		β	SE
X (HC)	a	0,577***	0,041	c'	.449***	.071
M (DC)	-	-	-	b	.225**	.083
constant (IC)	i_M	1,706***	0,158	i_Y	1.363***	.247
	R^2 =0.45			R^2=0.37		
	F(1;236)= 195,30; P<0,01			F(2;235)= 68,451; P<0,01		

*p<0,05, **p<0,01, ***p<0,001; SE: standard error; b= unstandardized coefficients

The findings of the mediation model, which tests the mediating role of DC in the effect of HC on the firm's IC, are shown in Table 3. According to the findings, the HC explanation level for DC is 45%. The DC explanation coefficient of HC (β=0.577) is positive. The level of explanation of HC and DC for IC is 37%. The coefficient explaining the IC of HC (β=0.449) and DC (β=0.225) is positive. The resulting explanation coefficients are significant at the p<0.05 level. When the findings are examined in general, it is possible to state that HC contributes positively to DC, DC positively affects IC, and HC increases IC. The findings about the mediation role are shown in Figure 3.

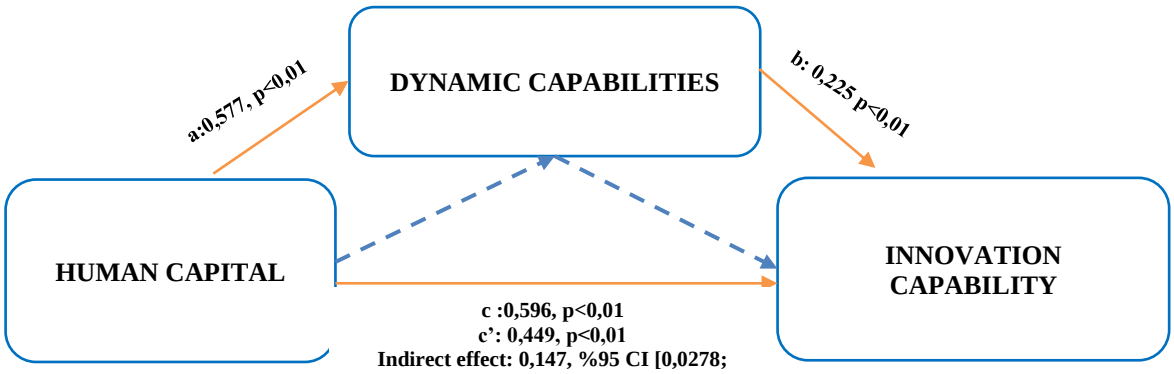

Figure 3. Result model

The mediating role of DC in the effect of HC on IC was 0.147. The obtained effect coefficient is within the 95% confidence interval [0.0278;0.2609]. The fact that the confidence interval does not include a value of 0 indicates that the obtained coefficient is reliable. When the findings are evaluated

in general, DC has a mediating role in the effect of HC on IC. In line with the findings, hypotheses H_1, H_2, H_3 and H_4 were supported.

CONCLUSION AND DISCUSSION

This research, which examined the effect of HC on IC through DC, obtained some empirical evidence. HC positively affects the formation of DC, DC has a positive impact on IC, and HC directly has a positive impact on IC. Finally, DC has a mediating role in the effect of HC on IC.

Research findings and previous research results are consistent. Pioneering studies in the literature argue that HC is important in sensing and capturing environmental developments and restructuring the resource base (Elsharnouby and Elbanna, 2021). Our research findings are consistent with this view. Employees' social relationships, information exchange with customers, past knowledge, individual abilities and training enable them to instantly notice the developments in the environment. Employees' perception of changes and demands provides information input to the company. With this information, company management can begin restructuring business processes and resources. Thus, HC contributes positively to the DC of the firm.

The strength of the company's DC, that is, the company's perception of the developments and demands in the environment and the structuring of its resource base, constitute the preliminary stage for the company to innovate. Renewing business processes with material and human resources and updating the resource base to compete can also enable innovations.

Finally, from a holistic perspective, human resources (HC) increase the firm's IC by responding to changes and demands in the environment and the firm (Ellonen et al., 2011; Breznik and Hisrich, 2014). The inimitable abilities of human resources can enable the company to respond quickly to environmental developments and innovate differently from other companies. These responses may develop into innovations in the firm's business processes, products, and services.

Previous research needs to pay more attention to HC, the micro-foundation of dynamic and IC. The results of this research are important in showing how HC is effective in a structure such as DC, which is seen as the result of the company's strategic orientation. In addition, IC is associated with the special efforts and R&D activities of the company's top management (e.g., Ahmadi and O'Cass, 2018; Van Lieshout et al., 2021; Zhong et al., 2022; Pitelis, 2022). The dominant mindset in research examining IC causes innovation talent to move away from HC. The results of this research are important in showing the role of DC in transforming HC into IC.

The research also offers some contributions in terms of its theoretical structure. Linking dynamic and IC to the company's strategic decision mechanism, that is, to the top management teams, may lead to ignoring the contribution of other employees, who comprise the majority of human resources. The role of other employees is important in implementing the strategic decisions taken by the top management. The research results contribute to the literature on innovation and DC by revealing the overlooked role of HC.

Previous research has yet to discuss how the relationship between IC and DC occurs. Some studies have explained DC as synonymous with innovation, some have explained DC as a result of IC, and some have explained the two as unrelated (Breznik and Hisrich, 2014). In this research, DC is aligned as an antecedent of IC. The connection between DC and IC has been established based on the empirical results presenting meaningful relationships. DC is the process of sensing opportunities and threats in the environment and eventually restructuring the resource base. IC is a structure that emerges due to this structuring, and research contributes to determining the sequential position of DC and IC.

While the research contributes to the literature, it has some limitations. The first is about the position of HC in the company. This research was conducted with personnel from different departments in the logistics company. Since the knowledge level of all personnel about the company and their abilities will be different, the non-specificity of the sample constitutes a limitation. Another limitation of the research arises from the perspective of the sector. This research was conducted in a company in the logistics sector. Since the sector dynamics will be related to the level of competition (Porter, 1980; Stock et al., 1998; Porter, 2006), the meaningful role of HC may differ according to the sector. On the other hand, industry structure may affect the need for DC and innovation. Therefore, this research may not reach the same results in different sectors.

Some suggestions can be offered, considering the limitations of the research and the discussions in the literature. The first is that future research may investigate the relationships between DC, IC and HC more deeply. For example, employees must be aware of its strategies for the company's success. Employees' knowledge about company strategies can strengthen their behavior for the company's benefit. Therefore, including employees' knowledge and interests about the company's strategies in the research can provide important findings.

Some business units or employees constitute the company's boundary units (for example, marketing-sales personnel, public relations, etc.). These units and employees may perceive developments in the environment differently from other units. In future research, it may be suggested to investigate the contribution of business units to DC and IC more specifically. Thus, knowledge showing the relationship of HC with DC and IC can be expanded.

Ethical Statement

In the writing and publication processes of the study titled “Linking Human Capital to Innovation Capability: A Dynamic Capabilıties Perspective” research and publication ethics have been strictly adhered to, and no data manipulation has been conducted. Approval was received from the Istanbul Beykent University Social Sciences Ethics Committee dated 15.09.2023 and numbered 118716 for the suitability of the data collection tools.

Contribution Statement

The author of the study has contributed to all stages of the study, from writing to drafting, and has approved the final version after reviewing it.

Conflict of Interest Statement

This study has not led to any individual or institutional/organizational conflict of interest.

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Extended Abstract

Linking Human Capital to Innovation Capability: A Dynamic Capabilities Perspective

Analyzing the logical relationships between dynamic capabilities (DC) and innovation capabilities (IC) and determining the impact of human capital (HC) on DC and IC can make a modest contribution to the gaps and debates in the literature. Therefore, the research aims to determine as determining the role of DC in the impact of HC on IC.

The hypotheses created depending on the purpose of the research are as follows;

H1: HC positively affects DC

H2: DC positively affects IC

H3: HC positively affects IC.

H4: DC has a mediating role in the effect of HC on IC.

The research population consists of white-collar employees of a logistics company operating in Istanbul. The research sample consists of employees working in the company in question and working in the same company for at least three years. DC are not structures easily seen in the company (Teece, 2007). Data obtained from new employees may yield unreliable results. Therefore, data collection was carried out from white-collar personnel who had been working in the company for at least three years. A simple random sampling technique was used to determine the sample. The sample of the research consists of 238 people.

The SPSS 25 package program and SPSS Process 2.16.3 macro were used to analyze the data. First, analysis, reliability analysis and correlation analysis were performed using the SPSS 25 package program. Hair et al. (2014), frequently used in the literature, were used as the basis for factor and reliability analysis.

Hair et al. (2014) and, frequently used in the literature, were taken as the basis for evaluating the results of factor analysis and reliability analysis. The limit values in question are as follows: KMO = 0.60/0.70 and above, Bartlett's Test of Sphericity = $p < 0.05$, explained variance = 60% and above, Cronbach's Alpha coefficient = 0.60/0.70 and above, factor load = 0.40 and above.

The bootstrap method was used to determine the mediation role. According to many researchers, the Bootstrap method gives more reliable results than the traditional method of Baron and Kenny (1986) (Gürbüz, 2019; Hayes, 2018). The mediation model was tested using model 4 in the Process Macro developed by Hayes (2018). During the analysis, 5000 bootstrapping was preferred. In mediation tests conducted with resampling, the confidence interval (CI) value is used instead of the p-value.

According to the mediation analysis results, the explanation level of HC for DC is 45%. The DC explanation coefficient of HC (B=0.577) is positive. The level of explanation of HC and DC for IC is 37%. The coefficient explaining the IC of HC (B=0.449) and DC (B=0.225) is positive. The resulting explanation coefficients are significant at the $p<0.05$ level. The mediating role of DC in the effect of HC on IC was 0.147. The obtained effect coefficient is within the 95% confidence interval [0.0278;0.2609]. The fact that the confidence interval does not include a value of 0 indicates that the obtained coefficient is reliable. When the findings are evaluated in general, DC has a mediating role in the effect of HC on IC. In line with the findings, hypotheses H1, H2, H3 and H4 were supported.

This research examined the effect of HC on IC through DC, and some empirical evidence was obtained. HC positively affects the formation of DC, which positively impacts IC. HC directly has a positive impact on IC. Finally, DC has a mediating role in the effect of HC on IC. In future research, it may be suggested to investigate the contribution of business units to DC and IC more specifically. Thus, knowledge showing the relationship of HC with DC and IC can be expanded.