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Social capital and organizational performance: The mediating role of innovation activities and intellectual capital

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ABSTRACT

While the positive influence of intellectual capital on innovation is well-established in the extant literature, research on how innovation activities affect intellectual capital is relatively scarce. Moreover, even though there is ample research showing the positive relationship between social capital and organizational performance, its significance is generally underappreciated by practitioners. This paper aims to contribute to the literature by investigating the influence of innovation activities on the depth of intellectual capital and the role they play in the relationship of social capital and organizational performance, using Turkish public hospitals as an exemplary application case. We argue that the activities carried out in these institutions during the innovation implementation process contribute to intellectual capital internally, with positive impacts on organizational performance. We hypothesize that social capital plays a vital role in this relationship by enhancing social interaction while fostering trust and cooperation. We formalize these ideas in a structural equation modeling framework in which innovation activities and intellectual capital serially mediate the relationship between social capital and performance and show that the implications of our model are supported by data from Turkish public hospitals. We find no evidence of a direct link between social capital and performance or between innovation activities and performance and determine that intellectual capital is the crucial link between social capital and organizational performance.

1. Introduction

Attaining and sustaining superior performance is the goal of every organization, even public institutions whose ultimate goal is not necessarily to make a profit. The strategic management field has a plethora of theories, views, and recommendations about how to improve organizational performance, and studies demonstrating the impact of the social aspects of organizations on organizational performance are by no means new, and yet we believe that they generally go unrecognized. This is true for hospitals as well, which are typically more reluctant to catch up with the developments in management systems especially if these are intangible and harder to measure [1,2].

Motivated by the inadequate attention paid to the social determinants of organizational performance by organizational leaders, managers, and policy-makers, our research investigates the influence of the social side of the organization, in other words, social capital on organizational performance and how and via which mechanism this effect is realized, in the context of hospitals operating in a union. To that end, we also include organizational intellectual capital and activities involved in the implementation of innovations (innovation activities) in our model, as they are important drivers of organizational performance and related to the social side of the organization. Our research is built upon and it extends on Nahapiet and Ghoshal's [3] research on the relationship between social capital, intellectual capital, and organizational performance.

We conduct our research in a union of Ministry of Health (MoH) hospitals in Turkey and investigate the influence of social capital on organizational performance and the role innovation activities and intellectual capital play in this relationship. We argue that social capital will positively influence organizational performance via the serial multiple-mediation of innovation activities and intellectual capital. In Turkish MoH hospitals, even though there are some employee-initiated innovation projects and employees are encouraged to innovate, innovations are predominantly government-initiated. Government-initiated innovations are typically policy-led, are not internally motivated, and

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do not originate from organizational intellectual capital. Innovation implementation process which may involve training and user support, coordination and cooperation among different individuals, and sharing of information can be considered as a learning opportunity [4]. Thus, the innovation implementation process is believed to stimulate learning and contribute to new knowledge creation [5–7]. Therefore, we argue that the activities and efforts involved during the implementation process can indirectly affect organizational performance by positively influencing intellectual capital. Hence, while most of the studies in the literature consider intellectual capital as an antecedent of innovation, we depart from the conventional practice of investigating the effects of intellectual capital on innovation and believe that investigating the effects of externally initiated innovation activities on intellectual capital is essential in understanding the dynamics between innovation activities and organizational performance in public institutions. We also argue that social capital plays a vital role in this mechanism by positively influencing innovation activities.

Even though there is extant research on the effects of social capital on organizational performance, there is a paucity of empirical studies investigating this effect in a model of closely intertwined constructs of innovation activities and intellectual capital, and to the best of our knowledge is nonexistent in a healthcare setting. This study aims to contribute to the literature firstly by providing a conceptual framework to uncover the relationships among these constructs using structural equation modeling. Secondly, while the influence of intellectual capital on innovation is well-established, empirical research on the effects of innovation activities on intellectual capital is relatively scarce. This research aims to contribute to the literature by filling this gap. Thirdly, our study is conducted in public institutions, and we believe that due to different policies, procedures, and dynamics, the interrelationship between these concepts could be different from the private sector. Finally, most of the extant research on these factors focused on the developed world. It could provide valuable insight as to how the same mechanism works in a developing country.

This paper is structured as follows. The next section discusses the theoretical background of the research, reviews the relevant literature, and sets out the research hypotheses. Section 3 presents the research methodology followed by the analysis and results in Section 4. The findings of the research and their implications are discussed in Section 5. Section 6 provides a summary and conclusion and points out the limitations of the study and the directions for future research.

2. Literature review and hypotheses development

This section aims to lay the theoretical foundation of the research and provide a literature review of the key variables in the study. Social capital, innovation activities, intellectual capital, and organizational performance are defined, studies in the extant literature regarding these variables and their interrelations are discussed, and the hypotheses of this study are developed. The conceptual framework of the research model is delineated at the end of this section.

2.1. Theoretical foundation

According to social capital theory, organizational social capital is embedded in the relationships between members of the organization [3]. Relationships based on trust, respect, effective communication, and reciprocity can create organizational advantage and value, by facilitating teamwork, coordination, knowledge-sharing, and new knowledge creation [3,8]. We believe that intellectual capital and innovation activities in an organization should not be analyzed shorn of social relationships. We view intellectual capital and innovation activities to be socially constructed. The roots of intellectual capital are considered to be deeply embedded in social relationships [3,9]. Similarly, innovation is considered to be a social learning process that involves the participation and cooperation of many organizational members [10]. Our view of the aforementioned constructs is consistent with the resource-based view (RBV) of the firm. RBV is a strategic management framework trying to understand and explain the performance differences among firms [11]. RBV emphasizes the importance of a firm's strategic resources in attaining sustained competitive advantage [11]. RBV views the firm as a pool of resources consisting of tangible resources like land and capital, as well as intangible resources like capabilities, skills, competencies, strategic behavioral, and social phenomena [11]. RBV considers firm-specific, intangible, socially complex capabilities and skills that are embedded in the routines and organizational structure of the firm to be the most valuable resources [12]. Hence, both social capital and intellectual capital can be considered as socially complex and hard to imitate organizational resources that are important determinants of organizational performance. According to RBV, knowledge embedded in collective processes is critical for organizational performance, and also as mentioned earlier, social capital plays a lubricating role, facilitating knowledge-sharing and knowledge creation in this mechanism [3,12,13].

2.2. Social capital and innovation activities

There is a profusion of definitions of social capital (SC) in the literature. In this study, social capital is defined as the values and properties such as social interaction, mutual trust and understanding, shared vision and norms, which allow organizational members to work toward a goal successfully [14]. It is recognized as a multidimensional construct consisting of structural, relational, and cognitive capital.

Structural social capital (SSC) is about the overall network of relationships and accessibility of network members [10]. From an organizational perspective, ease of access among organization members (both in terms of hierarchical structure and spatial proximity) is important for communication and sharing. *Relational social capital (RSC)* is about the quality of relationships in a network. Normative characteristics of relationships such as mutual respect and trust, reciprocity, norms, identification are studied under relational social capital [15]. *Cognitive social capital (CSC)* relates to common understanding and values, shared vision, and goals [3].

Innovation is considered imperative for organizational success [16]. Methods, practices, and systems in other organizations can be borrowed and implemented in an organization, and they will be considered innovations as long as they are new for the adopting organization [17]. Djellal & Gallouj [18] state that innovation efforts in hospitals have frequently been unrecognized and underestimated and that to fully appreciate innovation efforts in hospitals, a more broad and open definition of innovation should be adopted. They argue that not only radical innovations but even incremental innovations resulting from a simple change and adaptation should be considered [18]. We define innovations as the intentional developments and improvements made in services and/or processes to achieve a certain desired outcome [19]. Following Djellal & Gallouj [18], we do not limit innovation activities to radical, large-scale innovations and consider small-scale, incremental innovations as well. Furthermore, we focus on service and process innovation 'adoption' rather than 'generation'. Innovation activities, in this study, refer to the in-hospital efforts and activities involved in the implementation of these innovations.

It is commonly expressed that innovation requires the convergence of knowledge from different actors and that social capital enables this convergence [16]. Innovation is considered to be a social learning process that entails the participation of many different actors [10].

Most research in the extant literature shows a positive relationship between social capital and innovation. The existence of trust among members of an organization has been shown to enhance communication and cooperation [20] and facilitate resource exchange and combination which then positively affect product innovation [21]. Frank et al. [22] investigated the diffusion of innovations within schools,

and they concluded that when individuals identify themselves with their organization and think that they share a common faith, they may exert social pressure on their colleagues for coordination and successful implementation of innovations.

Leenders et al. [23] found an inverted U-shape of the relationship between tie strength in a team and team creativity. They delineated that a very low or very high level of interaction frequency impeded team creativity, and that team creativity was highest with moderate interaction frequency. On the other hand, it is indicated by Damanpour [17] that less interaction would be more desirable in the idea generation stage of innovation, whereas during the innovation implementation stage, more interaction and closer ties are desired to build solidarity. Since the idea generation stage of innovations in this study does not occur inside the hospitals, it is not taken into consideration. Only the implementation stage of the innovations is relevant for this study. Hence, high social interaction, and close relationships are expected to have a positive effect on innovation activities, and we argue that social capital will have a positive impact on innovation activities.

H1: Social capital has a direct and positive effect on innovation activities.

2.3. Social capital, innovation activities, and intellectual capital

Intellectual capital (IC) can be added to the list of concepts that has an abundance of definitions despite the arduousness of conceptualizing it. In the literature, IC is commonly studied as a multidimensional concept consisting of three main constructs: human, structural, and customer capital [24].

In this study, IC is defined as the knowledge and knowing capability of an organization consisting of human, structural, and customer capital [3]. *Human capital (IC-HC)* consists of an organization's members' knowledge, capability, experience, and skills [13]. It is the knowledge stock and power an organization possesses via its members [24]. *Structural capital (IC-SC)*, on the other hand, comprises all the knowledge apart from IC-HC; business procedures, policies and strategies, processes, routines, organizational charts, and manuals. It is expressed as the knowledge retained in the organization after the employees leave [24]. *Customer capital (IC-CC)* is about the knowledge embedded in an organization's relationships and networks with its customers [24]. In this study, the patients of the hospitals constitute customer capital. The hospitals' relationships with other external institutions and stakeholders are not considered in this research.

The empirical studies in the extant literature investigating the relationship between SC and IC display mixed results. While most studies support the theoretical framework outlined by Nahapiet and Ghoshal [10] and confirm the positive influence of SC on IC, some of the studies do not. Wu and Tsai [25] find a positive relationship between SC and knowledge-creating activities and IC while Demartini [26] found a negative relationship between CSC and SSC and IC, and a positive relationship only between RSC and IC. Furthermore, in some studies, SC was found to be a moderator of IC [27]. In this study, we postulate that SC affects IC directly and also indirectly via innovation activities.

H2: Social capital has a direct and positive effect on intellectual capital.

In the literature, commonly, the effects of IC on innovation are investigated. In this study, we take a different approach and investigate the effects of innovation activities (INNO) on IC. In Turkish MoH hospitals, most innovation projects are government-led. For these projects, while the idea generation phase of the innovations takes place outside the hospitals, the implementation phase takes place inside the hospitals. Therefore, most innovations are not employee-initiated and hence are not entirely consequences of hospitals' IC. Even though IC is still crucial in the implementation phase of innovations, it is not possible to state with utmost certainty that these innovations would have been initiated regardless of government policy. On the other hand, innovation can be considered as a process of learning and knowledge creation through which new problems are defined, and new knowledge is created to solve them [5]. Furthermore, the implementation of innovations alone can be considered as inputs in the knowledge creation process [5,7]. Therefore, we believe that efforts and activities performed during the process of implementing innovations may trigger knowledge sharing and learning, thereby contributing to the IC of the organization [6,28]. Considering our discussion on the positive effect of SC on INNO in the previous section and the evidence from the literature, we argue that SC can indirectly affect IC via INNO:

H3: Innovation activities mediate the relationship between social capital and intellectual capital.

2.4. Social capital, innovation activities, intellectual capital, and organizational performance

Organizational performance (PERF) in this study is considered to be a multidimensional concept that uses financial and non-financial indicators to measure its success in reaching its predetermined goals. The empirical evidence on the relationship between SC and PERF suggest both direct and indirect relationship [29,30]. In the extant literature, it is commonly expressed that SC enhances PERF by fostering cooperation and coordination or by facilitating knowledge transfer resulting in increased IC, which in turn increases PERF via improved innovation [3,29].

Similarly, the studies exploring the effect of IC on PERF also provide support for both direct and indirect effects. IC has been shown to affect PERF via knowledge management capabilities [31] and intellectual property [32]. The studies of Bontis [33], Bontis et al. [24], and Sharabati et al. [34] show a positive direct link between IC and PERF. Therefore, following the evidence from the literature, we can say that SC is expected to affect PERF indirectly through IC. Hence, we posit that:

H4: Intellectual capital mediates the relationship between social capital and organizational performance.

The positive effect of innovation on PERF has been well established in the extant literature [35–38]. However, in this study, we are investigating the effect of innovation activities (INNO) rather than the innovation itself on PERF. Adopting and implementing innovation is a complex process affecting many intermediary factors along the way [39]. This is especially true when process innovations are considered where the effects are expected to be mostly indirect rather than direct [39]. Consequently, we do not expect INNO to directly affect PERF. On the other hand, as mentioned previously, innovation can be considered as a process of learning and knowledge creation that can trigger new waves of knowledge creation [5,7]. Hence, we believe that efforts exerted and activities performed during the process of innovation implementation may contribute to organizational IC, which in turn contributes PERF. Hence, we believe that INNO affects PERF only indirectly. We posit that:

H5: Intellectual capital mediates the relationship between innovation activities and organizational performance.

Building on our discussion in previous sections, we can argue that SC facilitates INNO, which may trigger the creation of a new IC, which in turn may increase PERF. Accordingly, we posit the following hypothesis:

H6: Innovation activities and intellectual capital serially mediate the relationship between social capital and organizational performance.

Table 1 summarizes the hypotheses of the research model. The conceptual framework, which depicts the relationship between the main constructs of the research, is delineated in Fig. 1.

3. Research methodology

3.1. Sample, data, and procedures

This research was conducted in a union of hospitals that operate under the Turkish Ministry of Health. The health care system in Turkey

Table 1
Summary of the Hypotheses.

Hypothesis	Independent variable	Dependent variable	Expected sign
H1	Social capital	Innovation activities	+
H2	Social capital	Intellectual capital	+
H3	Social capital x Innovation activities	Intellectual capital	+
H4	Social capital x Intellectual capital	Performance	+
H5	Innovation activities x Intellectual capital	Performance	+
H6	Social capital x Innovation activities x Intellectual capital	Performance	+

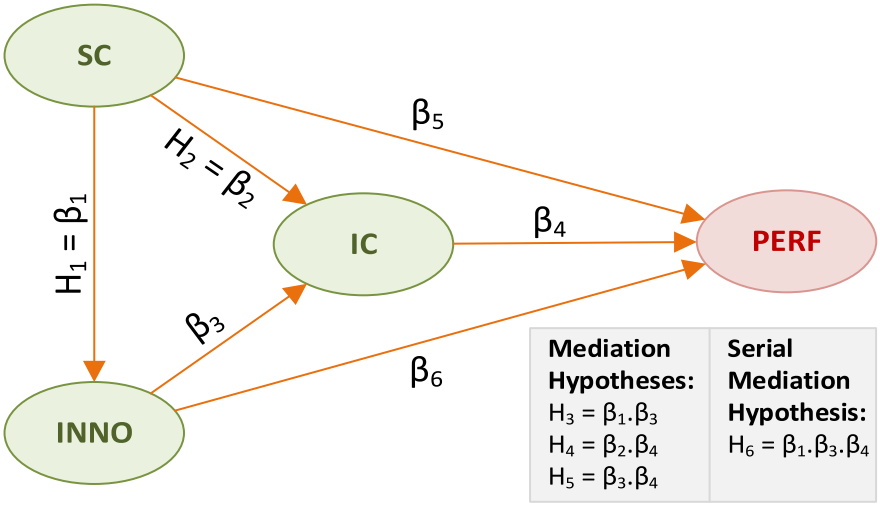

Fig. 1. Conceptual framework.

went through a comprehensive reform known as the 'Health Transformation Program (HTP)' starting in 2003 to increase access to health care services and reduce out-of-pocket payments by providing universal health coverage, improve health outcomes, and overall efficiency [40]. After the implementation of HTP, the performance of the government hospitals began to be measured systematically for the first time. Furthermore, to achieve the goals of HTP, many innovation projects were initiated and executed throughout the hospital system. Hence, we believe that public hospitals are great candidates for investigating the relationship between INNO and PERF and the role SC and IC play in it.

MoH hospitals are government-funded hospitals—i.e., public institutions. At the time of the research, MoH hospitals were part of 'Public Hospital Unions.' There were 89 unions. Each union is comprised of teaching and research hospitals (general or specialty), specialty hospitals, and general state hospitals. A union is a collection of hospitals serving constituents within a geographic area. All of the unions and hospitals were governed by the same rules and regulations put forth by the Public Hospitals Institution (Turkiye Kamu Hastaneler Kurumu), which operated under the supervision of the MoH. These unions comprised of similar types of hospitals offering similar services, they were assessed by the same performance measurement system, and they had a similar organizational structure. Therefore, a union, believed to be the best representative of the hospitals was selected as a sampling source for this research, and the data was collected from individual respondents within this union in an effort to investigate their perceptions of our model's constructs. In this study, we considered one of the most prolific unions (i.e., covering one of the most populated and demanding areas—Istanbul) within the broad healthcare system as our sample population. It is the largest service provider among the total unions in Turkey, with over 9 million outpatient visits, over 2 million emergency room visits, and approximately 200,000 inpatient stays per year. The total number of employees is approximately 8,000, of which 1,800 are physicians, and 2,800 are nurses [41].

The primary source of data in this study was questionnaires. The questionnaires were administered to the chief staff members of the departments. In other words, the participants were chief nurses, chief doctors, chief residents, department heads, managers, deputy managers, lab managers, and supervisors. By including chiefs of different departments, a more holistic view of the system is targeted. Due to their administrative role, chief staff members have more interaction with the employees within and outside of their departments and are expected to be more knowledgeable about the constructs of our research model.

The total number of chief employees in our sample was 917. During the course of the study, the researchers were able to reach 623 chief employees and were able to collect 431 questionnaires. After a meticulous data screening process, of the 431 collected questionnaires, 17 of them were eliminated due to a large number of missing values. The response rate was determined to be 66%. For details regarding the characteristics of the individual respondents, please refer to Table A.1 in the appendix.

3.2. Variables and measures

The survey instrument was developed to investigate how SC affects PERF, and what role INNO and IC play in this relationship within Turkish public hospitals. SC, INNO, IC, and perceptual organizational performance (PERFP) constructs were measured via a survey questionnaire. Hospitals' objective performance data were obtained from their annual performance reports.

The questionnaire consists of 50 questions related to the constructs and is composed of four parts. The first part attempts to capture the demographic characteristics of the respondents and their perception of organizational performance. The second part is about SC, the third part is about IC, and finally, the fourth part aims to capture INNO within the hospitals.

The survey instrument was developed following the guidelines commonly mentioned in prior research studies [42,43]. During the process of developing the survey instrument, the extant literature was studied, and prior theoretical and quantitative research studies were examined. Numerous survey instruments were assessed, and their compatibility with the theory was explored. Subsequently, items from various studies were gathered to construct the first draft of the instrument. The

wording of the questionnaire items was modified to ensure they were appropriate for a hospital setting. The content validity of the instrument was evaluated by academics and domain experts. The experts assessed the wording, format, sequence, and relevance of the questions. Depending on their suggestions, elimination and modification of some questions were performed until it was considered satisfactory. The original version of the survey items was in English. However, since the survey was conducted in a predominantly Turkish-speaking setting, the questionnaire was translated into Turkish by two experts fluent in both English and Turkish. The Turkish version was then back-translated to English by two other experts fluent in both languages. This was done to ensure that the translated version was comparable to the original questionnaire.

SC, IC, and INNO were measured using a 5-point Likert-type scale ranging from 1=Strongly Disagree, 2=Disagree, 3=Somewhat Disagree, 4=Agree, 5=Strongly Agree. The questions of the PERFP questionnaire were measured using a Likert-type scale ranging from 1 to 7 (1=Very Poor, 2=Poor, 3=Somewhat Poor, 4=Neutral, 5=Somewhat Good, 6=Good, 7=Very Good).

Social capital was measured as a multidimensional construct consisting of SSC, RSC, CSC following Nahapiet and Ghoshal's [3] theoretical framework. It was measured via 15 questions developed through the insights drawn from Nahapiet and Ghoshal [3] and the works of Turner [44] and Sahin [15]. *Intellectual capital* was also measured as a multidimensional construct consisting of IC-HC, IC-SC, and IC-CC. It was measured by 23 questions that were adapted from Bontis [33], Subramaniam and Youndt [37], and Hsu and Sabherwal [31]. *The innovation activities* scale consisted of nine questions and was developed largely by the insights drawn from Djellal and Gallouj's [18] and Omachonu and Einspruch's [45] research. Miles [46], Gunday et al. [47], and Oslo Manual [48] were other sources that were used to develop this scale.

Organizational performance (PERF) was measured by the weighted combination of objective and perceptual organizational performance data. Objective performance data were obtained from the hospitals' annual performance reports. Turkish public hospitals' performance is measured annually by a multidimensional performance measurement tool, which was developed following Kaplan and Norton's [49] 'Balanced Score Card' approach. Performance of the hospitals are measured along four dimensions and each dimension consists of a large number of indicators commonly used in the literature: *(1) Health care services performance* (e.g. rate of patients returning to ED within 24-hours [50], bed occupancy rate, bed turnover rate, and average length of stay [51,52] *(2) Financial services performance* (e.g. ability to pay debts [53], revenue budget realization rate, expense budget realization rate) *(3) Administrative services performance* (e.g. staff training [54], employee satisfaction rate [52]), and *(4) On-site performance assessment* by Ministry of Health auditors [55]. The on-site assessment involved a detailed assessment of infrastructure and equipment, infection control and prevention, facility safety and management, and patient safety. Each dimension is measured on a score of 1000 points, and the dimensions do not carry equal weight in the total hospital performance score. While the weight of the health care services dimension is 35%, the weight of financial and administrative services is each 20%, and the weight of on-site assessment is 25%. The final performance score is the weighted sum of these dimensions. The data for PERFP was collected via a survey instrument. The survey questionnaire was developed following the objective performance measurement tool used in the hospitals. Experts and academics were consulted, and modifications were performed based on their recommendations. The questionnaire consists of six questions, including the three dimensions of the objective performance measurement tool used in the hospitals.

4. Analysis and results

The data analysis was conducted in three steps: (1) Exploratory Factor Analysis (EFA), (2) Confirmatory Factor Analysis (CFA), (3) Hypothesis Testing by structural equation modeling (SEM).

Table 2
Confirmatory factor analysis model fit results.

First Degree CFA								
χ^2	χ^2/df	CFI	GFI	AGFI	TLI	IFI	RMSEA	SRMR
2190.934	1.947	0.931	0.823	0.800	0.925	0.931	0.048	0.046
Second Degree CFA								
χ^2	χ^2/df	CFI	GFI	AGFI	TLI	IFI	RMSEA	SRMR
2294.319	2.011	0.925	0.813	0.791	0.920	0.926	0.049	0.051

4.1. Exploratory factor analysis

EFA with Varimax rotation was performed to determine the factor structure and extract the dimensions of SC, IC, INNO, and PERF. EFA yielded three factors each for SC (SSC, RSC, and CSC) and IC (IC-HC, IC-CC, and IC-SC) and one factor for INNO and one for PERF. The total variance extracted for SC, IC, INNO, and PERF was 67.39%, 65.76%, 65.40%, and 61.81%, respectively. All of the factor loadings for the sub-dimensions SSC, RSC, CSC, IC-HC, IC-CC, IC-SC, INNO, and PERF were greater than 0.5 (p<0.01) (Please refer to Table 2 A in the appendix for details).

To measure the internal consistency of the scales, a reliability analysis was performed. Cronbach's alpha was used to measure reliability. The Cronbach's alpha values for SC, IC, INNO, and PERF were determined to be 0.90 or higher (See Table 3).

4.2. Confirmatory factor analysis

CFA was performed in order to test the measurement model. Initially, first-order CFA was performed, and SSC, RSC, CSC, IC-HC, IC-SC, IC-CC, INNO, and PERF were analyzed in a model. The goodness of fit indices for the first-order CFA suggests a good fit to the data. The regression weights are all are significantly related to their underlying constructs (p<0.01). The results are χ^2/df = 1.947, comparative fit index (CFI) = 0.931, standardized root mean square residual (SRMR) = 0.046, root mean square error of approximation (RMSEA) = 0.048, goodness of fit index (GFI) = 0.823, adjusted goodness of fit index (AGFI) = 0.800, Tucker Lewis index (TLI) = 0.925 and incremental fit index (IFI) = 0.931. The first-order CFA results show that the sub-dimensions of SC and IC exist; however, to confirm that these sub-constructs are linked to their underlying constructs, second-order CFA needs to be carried out.

Second-order CFA results are similar to the first-order results, and they indicate a good fit. Table 2 displays the results. The value of χ^2/df is 2.011, which is between 1 and 3, and RMSEA is 0.049 (RMSEA<0.06), implying a good fit [56]. CFI, GFI, and AGFI are all well within acceptable limits. Table 3, which displays a summary of the results of measurement model validation, shows that all the sub-constructs (SSC, RSC, CSC and IC-HC, IC-CC, IC-SC) have regression weights greater than 0.6 (p<0.01) and are significantly linked to their parent constructs (SC and IC). Thus, both models show a good fit for the data. We choose to proceed with our research with the higher-order model. This decision is based on two reasons. In the literature in similar cases, the Conditional Akaike Information Criterion (CAIC) of the two competing models of different complexity are compared, and the model with the lower CAIC is considered to have a better fit [57]. When we compare the CAIC of the first-order and the second-order models, even though they are very close (CAIC for the first-order model = 3244.814; CAIC for the second-order model = 3235.785), the second-order model has a slightly lower CAIC. Therefore, we choose the second-order model due to the lower CAIC and also because the higher-order model is supported by the literature and is more relevant for the purposes of our research.

Table 3
Summary of confirmatory factor analysis results.

	Items	RW[a]	AVE[b]	CA[c]	CR[d]
Social Capital	**SC**	–	0.723	0.932	0.887
Structural Social Capital	SSC	0.866	0.651	0.897	0.902
Relational Social Capital	RSC	0.813	0.565	0.870	0.863
Cognitive Social Capital	CSC	0.872	0.561	0.870	0.864
Intellectual Capital	**IC**	–	0.736	0.948	0.892
Structural Capital	IC-SC	0.927	0.608	0.926	0.925
Human Capital	IC-HC	0.910	0.579	0.912	0.905
Customer Capital	IC-CC	0.724	0.529	0.855	0.846
Innovation activities	**INNO**	–	0.610	0.934	0.934
Performance	**PERF**	–	0.519	0.864	0.865

All the regression weights are statistically significant at $p<0.01$.
[a]RW: Regression weights.
[b]AVE: Average variance extracted.
[c]CA: Cronbach's alpha.
[d]CR: Composite reliability.

4.2.1. Validity and reliability analyses

To measure internal consistency (reliability), composite reliability (CR) values were calculated. Please see Table 3. CR values for all the constructs were above 0.80, which is above the threshold level of 0.7 for construct reliability [58]. CR is also considered to be an indicator of convergent validity [59]. In addition to CR, regression weights greater than 0.5 ($p<0.01$) imply that factors converge at a common point (latent construct), also indicating convergent validity [59]. All the regression weights are greater than 0.5 ($p<0.01$) (Please refer to Table 2 A in the appendix for detailed results). Another indicator of convergent validity is the average variance extracted (AVE). All the values for AVE are greater than 0.5, satisfying the condition for high convergent validity [58].

Discriminant validity is another condition needed to be satisfied to ensure construct validity. Thirty-three pairwise tests between the constructs were performed to measure discriminant validity. Chi-square difference tests were performed on constrained and unconstrained models. A significant chi-square difference implies discriminant validity [60]. Table 4 shows the results of the chi-square tests. The tests were done on both first-order and second-order models. The tests show all of the constructs are significantly distinct from each other; therefore, providing strong support for discriminant validity.

Common-method variance (CMV) occurs when responses vary systematically because both the dependent and independent variables in the research study are collected through the same source (i.e., survey instrument) [61]. CMV may inflate or deflate the correlations among the variables causing the researchers to arrive at misguided conclusions [61,62]. It is stated in the extant literature that for CMV to result in CMB, it has to be large enough and that most CMV is too small to cause CMB [61].

PERFP data were collected via a survey instrument, while objective performance data were gathered from the hospitals' annual performance reports. Hence, having gathered data from two different sources, we do not expect CMV to be a problem in our research. Regardless, we performed statistical analyses to ensure CMB did not exist in our research. We performed the commonly used Harman's single factor test both on the EFA and on the CFA models to test for CMB. Harman's single factor test was used to check if a single factor explained the majority of the variance [62]. We constrained all the factors to a single factor both in the EFA and the CFA models. We found the variance in the EFA model to be 45.10% and 16.81% in the CFA model. Variance above 50% indicates that CMB may exist [62]. Therefore, our results indicate that our research was not affected by CMV and that CMB does not exist.

4.3. Hypotheses testing

Table 5 shows the descriptive statistics and correlations among the variables. It is observed that all the correlations between the latent constructs are positive, relatively strong, and statistically significant.

To test the hypotheses, we need to test the structural model. The structural model was tested via the structural equation modeling (SEM) procedure using the IBM SPSS Amos statistical software program. By using SEM, we attempt to investigate the relationships among the constructs and how they affect each other. The structural model is shown in Fig. 2. The exogenous variable in the structural model is the SC, and the IC, INNO, and PERF are the endogenous variables. All the variables are latent constructs. Prior to the hypotheses testing, we measured the goodness of fit of the structural model. Following that, we investigated the relationships between SC and INNO, SC and IC, the mediation of INNO in SC-IC, the mediation of IC in SC–PERF and INNO–PERF relationships, and the serial mediation of INNO and IC in SC–PERF relationship.

The fit statistics of the structural model are displayed in Table 6 and are well within the acceptable limits ($\chi^2 = 2294.502$, $\chi^2/df = 2.009$, SRMR = 0.051, RMSEA = 0.049, GFI = 0.813, AGFI = 0.791, IFI = 0.925, TLI = 0.920) implying a good fit to the data. From the regression weights, we see that there is a positive and significant relationship between SC and INNO ($\beta = 0.770$, $p<0.01$). Therefore, *H1* was confirmed, suggesting that SC positively affects INNO. The results also support the second hypothesis (*H2*) ($\beta = 0.730$, $p<0.01$), confirming the positive relationship between SC and IC.

H3 tests the mediation of INNO in the SC-IC relationship. We followed Baron and Kenny's approach [63] to investigate the mediating effect of INNO. First, we isolated SC and IC and explored the effect of SC on IC, and found a positive, significant relationship ($\beta = 1.041$, $p<0.01$). A similar procedure was applied to the SC–INNO relationship, and a positive, significant relationship was obtained ($\beta = 0.992$, $p<0.01$). Subsequent to these steps, the effect of INNO on IC was investigated in the full model, and a positive, significant relationship was discovered ($\beta = 0.254$, $p<0.01$). Lastly, the relationship between SC and IC was investigated in the full model. A positive and significant relationship was found between SC and IC ($\beta = 0.738$, $p<0.01$); however, it is noted that the effect of SC on IC has decreased with the presence of INNO in the full model. Hence, INNO partially mediates the SC-IC relationship.

In order to determine if this mediation was statistically significant, we performed Sobel's test and also used the bias-corrected bootstrap confidence interval (CI) method. The Sobel test revealed that the mediation was statistically significant (Sobel test statistic = 5.354, $p<0.01$) (See Table 7).

The bias-corrected bootstrap confidence interval method is a resampling method and is recognized as a more powerful way of testing indirect effects and has thus been preferred over other methods for testing mediation [64]. When performing the bias-corrected bootstrapping, we generated 2,000 resamples and checked if the indirect effects significantly differed from zero. The results of the bias-corrected bootstrapping method confirmed that the mediation of INNO in the SC-IC relationship is significant (bias-corrected bootstrapping estimate = 0.251, $p<0.01$; 95% CI (0.140–0.361)). The results are shown in Table 7.

H4 posits that IC is a mediator in the SC–PERF relationship. In order to investigate this indirect effect, the same procedure used in *H3* was repeated for *H4*. IC was determined to fully mediate the relationship between SC and PERF. To test the statistical significance of this mediation, the Sobel test was conducted (See Table 7). The Sobel test results revealed that the mediating effect of IC was indeed statistically significant (Sobel test statistic = 3.101, $p = 0.002$).

To further confirm these results, we used the bias-corrected bootstrapping method. We generated 2,000 resamples, and the bias-corrected confidence interval obtained as a result of the analysis revealed that the mediating effect is significantly different from zero confirming the mediating effect of IC in the SC–PERF relationship (bias-corrected bootstrapping estimate = 0.621, $p<0.01$; 95% CI (0.182–1.473)). The results are displayed in Table 7.

H5 postulates that IC mediates the relationship between INNO and PERF. We followed the Baron and Kenny approach [63] and followed

Table 4
Discriminant validity of the measurement model.

Test #	Description	Constrained χ^2Model	Constrained *df*	Unconstrained χ^2Model	Unconstrained *df*	χ^2 Difference
FIRST-ORDER						
1	SC<–>IC	1100.27	541	1175.19	542	74.92
2	SC<–>INNO	487.38	237	562.08	238	74.71
3	SC<–>PERF	426.89	181	519.11	182	92.22
4	IC<–>INNO	817.42	358	883.48	359	66.06
5	IC<–>PERF	608.91	287	712.58	288	103.67
6	INNO<–>PERF	226.21	82	303.80	83	77.58
SECOND-ORDER						
7	INNO<–>IC-HC	240.19	93	311.03	94	70.83
8	IC-CC<–>IC-HC	97.71	48	220.65	49	122.94
9	IC-CC<–>INNO	155.21	67	227.06	68	71.85
10	IC-SC<–>IC-HC	199.94	83	269.91	84	69.97
11	IC-SC<–>IC-CC	139.49	59	248.96	60	109.47
12	IC-SC<–>INNO	308.20	108	376.54	109	68.34
13	CSC<–>IC-HC	132.30	50	214.18	51	81.88
14	CSC<–>IC-CC	94.14	32	236.20	33	142.06
15	CSC<–>IC-SC	195.48	61	279.39	62	85.91
16	CSC<–>INNO	203.11	69	293.74	70	90.63
17	RSC<–>IC-HC	111.46	48	215.56	49	104.10
18	RSC<–>IC-CC	69.01	30	229.95	31	160.94
19	RSC<–>IC-SC	153.92	59	259.45	60	105.53
20	RSC <–>INNO	151.71	67	255.86	68	104.15
21	RSC <–>CSC	109.81	32	226.22	33	116.41
22	SSC<–>IC-HC	94.04	48	166.76	49	72.72
23	SSC <–>IC-CC	53.59	30	168.37	31	114.78
24	SSC <–>IC-SC	156.41	59	226.87	60	70.47
25	SSC <–>INNO	140.53	67	212.84	68	72.31
26	SSC <–> CSC	87.18	32	176.39	33	89.22
27	SSC <–> RSC	83.31	30	181.35	31	98.04
28	SSC <–>PERF	112.03	41	196.41	42	84.37
29	RSC <–>PERF	125.00	41	257.27	42	132.27
30	CSC <–>PERF	161.26	43	284.19	44	122.93
31	IC-HC<–>PERF	159.48	61	263.49	62	104.01
32	IC-SC<–>PERF	206.15	73	297.53	74	91.38
33	IC-CC<–>PERF	133.00	41	255.04	42	122.03

All values are statistically significant at $p<0.01$.

Table 5
Descriptive statistics and inter-correlations.

Variable	Description	$\overline{X}$	σ	SC	IC	PERF	INNO
SC	Social Capital	3.479	0.657	1	–	–	–
IC	Intellectual Capital	3.622	0.615	0.838**	1	–	–
PERF	Performance	3.130	0.659	0.630**	0.675**	1	–
INNO	Innovation	5.705	0.710	0.676**	0.811**	0.601**	1

Significance level (**): $p<0.01$.

Table 6
Structural model fit results.

χ^2	χ^2/df	CFI	GFI	AGFI	TLI	IFI	RMSEA	SRMR
2294.502	2.009	0.925	0.813	0.791	0.920	0.926	0.049	0.051

the steps in *H3* and *H4*. The significant relationship (β = 0.604, $p<0.01$) between INNO and PERF became insignificant (β=−0.061, p = 0.595) when IC was added into the relationship, indicating the full mediation of IC in the INNO–PERF relationship. To test the significance of IC's mediation, we performed the Sobel Test (Sobel test statistic = 5.367, $p<0.01$) and the bias-corrected bootstrapping method (bias-corrected bootstrapping estimate = 0.213, $p<0.01$; 95% CI (0.043–0.382)). The test results confirmed the significance of the IC's mediation (See Table 7).

To investigate the sixth hypothesis (*H6*), which posits the serial mediation of INNO and IC in the SC–PERF relationship, we first checked the total effect of SC on PERF in the absence of the mediators INNO and IC. The effect of SC on PERF was found to be positive and significant (β = 0.832, $p<0.01$). Following this step, the mediators (INNO and IC) were added to the model, and the direct effect of SC on PERF was analyzed in the whole model. The direct effect of SC on PERF was determined to be insignificant in the presence of the mediators (β=−0.098, p = 0.307), providing support for the serial mediation of INNO and IC between SC and PERF.

We calculated the serial mediating effect of INNO and IC using the equation/formula suggested by Taylor et al. [65]:

$$\text{z} - \text{value} = \frac{\mu \cdot \theta \cdot \lambda}{\sqrt{\mu^2 \cdot \theta^2 \cdot \text{SE}_\lambda^2 + \mu^2 \cdot \lambda^2 \cdot \text{SE}_\theta^2 + \theta^2 \cdot \lambda^2 \cdot \text{SE}_\mu^2}} \quad (1)$$

The results of the analysis are displayed in Table 7. The serial mediation of INNO and IC was found to be statistically significant (serial mediation estimate = 0.2.10, $p<0.01$). We also used the bias-corrected bootstrapping method to test for serial mediation. The bias-corrected confidence intervals confirm that serial mediation of INNO and IC on SC–PERF relationship is significantly different from zero (bootstrapping estimate = 0.210, p = 0.007; 95% CI (0.046–0.39)) (See Table 7). Hence, INNO and IC have a serial mediator effect on the relationship between SC and PERF.

5. Discussion of the findings

The crucial role SC plays in determining the performance of organizations is still underappreciated despite the extant research in the apparent link. Organizations are made up of people and they are like social communities [9]. Organizational SC is embedded in the relationships among members of an organization and is considered a valuable resource especially when it becomes part of organizational processes [12]. In our research, we try to highlight the important role SC plays in the performance of hospitals. In the context of MoH hospitals in Turkey, we show that social capital positively affects INNO and

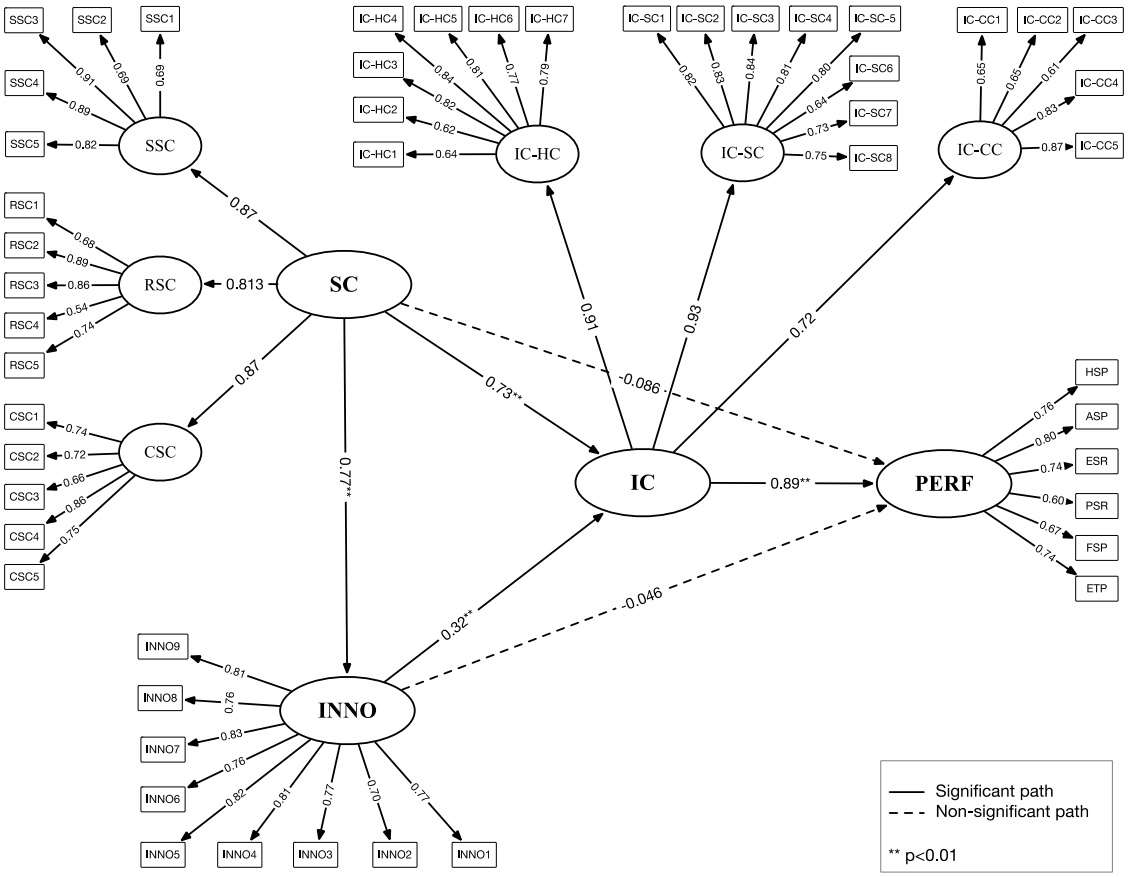

Fig. 2. Results of the structural model analysis.

Table 7
The results of the mediation analyses.

Paths	Path Coefficient (β)	Sobel Test Statistic (z-value)	Lower CI	Upper CI
H3: SC → INNO →IC	$0.251^{**}(\beta_1.\beta_3)$	5.354	0.140	0.361
H4: SC →IC → PERF	$0.621^{**}(\beta_2.\beta_4)$	3.101	0.182	1.473
H5: INNO →IC → PERF	$0.213^{**}(\beta_3.\beta_4)$	5.367	0.043	0.382
H6: SC → INNO →IC → PERF	$0.210^{**}(\beta_1.\beta_3.\beta_4)$	2.755	0.046	0.395

Significance level (**): $p<0.01$.

IC and contributes to PERF indirectly via the serial multiple-mediation of INNO and IC.

The mechanism by which these closely intertwined concepts of IC and SC and INNO affect PERF can be different in public institutions. Unlike private institutions, innovations in public institutions are commonly government-led, meaning these innovations are externally initiated. This is argued to cause implementing innovations even more challenging [66]. We believe that SC facilitates the implementation of these externally initiated innovations. Furthermore, since these innovations are not internally driven as a consequence of hospitals' IC but externally initiated, we seek to investigate the effect of these innovation activities on IC, not vice versa. In other words, we seek to explore the unintended and collateral consequences of externally initiated government-led INNO on the IC of the hospitals as well as the intended consequence on PERF and the role of SC in this mechanism.

Our findings suggest a positive link between SC and INNO, which is consistent with the literature. Our results show that mutual trust, respect and understanding, close interaction among the employees, ability to work together, and effective communication all have a positive impact on INNO. Even though we have not investigated the presence or effect of resistance to innovations in our research, based on the evidence from the literature, we can say that it is not unusual to observe resistance among employees to change and to new practices, and it is explicated that resistance could be even more severe when the innovations do not arise as a result of internal motivation [66]. When idea generation and decision-making phases of innovation take place outside the organization and by an external authority, it can make it harder for organization members to embrace it and can lead to disconnectedness [66]. Thus, the implementation of government-issued innovations in hospitals in our research could have a similar impact. Therefore, we could say that SC could play even a more vital role in the implementation process of government-issued innovations by enhancing coordination through increased trust among employees, by facilitating access and social interaction [3,28].

Our findings also suggest that SC affects IC positively both directly and by the partial mediation of INNO. Social interaction among the employees, ability to collectively work on problems, relationships based on trust and respect, common values and shared vision, in other words, SC, positively affect knowledge and resource sharing, motivates free expression of opinions and discussion, facilitates integration and coordination among different departments; in other words, IC. In addition to the direct link, activities, and efforts involved in the innovation implementation process act as a mediator in the relationship between SC and IC. We believe that this could be the result of possible learning triggered by INNO.

Table A.1
Characteristics of the individual respondents.

		Mean	Standard Deviation
	Years worked in the current hospital	11.04	8.09
	Years in profession	16.852	8.84
		n	%
Gender	Female	308	74.40
	Male	106	25.60
Position*	Physician	50	12.08
	Nurse and Midwife	192	46.38
	Clinical Support	42	10.14
	Management	58	14.01
	Administrative Support	72	17.39
Education	Middle School	2	0.5
	High School	19	4.6
	Associate's Degree	69	16.7
	Bachelor's Degree	146	35.3
	Master's Degree	118	28.5
	Doctoral Degree	8	1.9
	Medical Specialty Training	52	12.6

*__Clinical Support:__ Health care employees working in the laboratory and imaging centers (excluding physicians), pharmacists, physical therapists. __Management:__ Management staff consisting of hospital president, managers and deputy managers, chief physician, deputy chief physician. __Administrative Support:__ Employees working in the department of legal affairs, department of statistics, human resources.

On the other hand, we find no direct link between innovation activities and organizational performance. This is not a surprising result as investigating the direct impact of innovation on organizational performance is often considered too simplistic. [39]. Innovation implementation is a complex and long process, and it is commonly suggested that innovation affects organizational performance indirectly through other organizational factors [39]. Innovation implementation in itself is considered a learning and knowledge creation process, triggering new waves of knowledge. Therefore, activities involved in the implementation of innovations can have a positive impact on IC, hence indirectly contributing to PERF. We suggest that this is also true for innovation projects that end up being terminated after a certain period of the implementation process. Sometimes public institutions adopt innovations in search of legitimacy without fully implementing them [39]. When innovation projects are terminated without full implementation, even though the anticipated benefits of innovations on PERF are lost with it, we believe that efforts and activities involved in the innovation implementation process until the termination of the project can still contribute to PERF indirectly by positively influencing intellectual capital. In other words, our model shows that even if some innovation projects are not completed and terminated prior to full implementation, it does not necessarily result in a complete loss because innovation activities up to that point can contribute towards PERF by positively influencing IC. This is because the innovation implementation process involves training, sharing of information and cooperation among employees, and active participation of employees towards a common goal [4]. This is an important result in our research because, without the mediation of IC, INNO does not have any influence on PERF. The positive impact of INNO on PERF is realized through IC.

In a similar vein, we find no evidence of the direct influence of SC on PERF. Even though there are mixed results pertaining to this in the literature, the majority of the theoretical and empirical studies support the indirect relationship between SC and PERF. Although a direct relationship between SC and PERF was not determined, our findings indicate that SC affects PERF through the serial mediation of INNO and IC and also through the full mediation of IC. The results indicate that there is no direct link between SC–PERF and INNO–PERF, and the only link between the independent variables and the dependent variable is IC. IC is the key variable in our research, which carries over the positive effects of SC and INNO on PERF.

The findings of our study extend on and provide empirical support for Nahapiet and Ghoshal's [3] theoretical framework that suggests the importance of SC in determining the performance of organizations through the creation of new IC, and offer several managerial and policy implications. The results of our study show that SC, INNO, and IC all positively affect PERF. However, both SC and INNO affect PERF only indirectly. SC impacts PERF both through the serial multiple-mediation of INNO and IC and the full mediation of IC. Similarly, INNO also affects PERF through the mediation of IC. IC is the common denominator in both of the relationships. The findings suggest that INNO impacts PERF, though not directly. Thus, even if the INNO alone is not adequate to have a direct effect on PERF, they can have an impact via other organizational factors, such as IC. Therefore, for SC and INNO to translate into improved PERF, IC is indispensable. Without IC, neither SC nor INNO will improve PERF. Yet, not many organizations, especially healthcare institutions systematically measure their IC or incorporate it into their strategic plans [2]. Therefore, measuring and monitoring IC should be at the top of managers' and policy-makers lists who want to improve PERF.

Moreover, in public institutions, where most innovations are not employee-driven and are initiated by an external authority, employees may not have the motivation and willingness to implement them [66]. Hence, having a bonding mechanism like SC that can facilitate and motivate teamwork and cooperation is expected to have ample positive effects on the success of the innovation implementation.

6. Summary and conclusion

This study investigates the mechanism by which social capital, intellectual capital, and innovation activities in public hospitals affect organizational performance and validates a theoretically derived model. There are several contributions of this research.

First, even though social capital, innovation activities, intellectual capital, and organizational performance are closely intertwined concepts, there is a dearth of empirical research exploring these collectively in a model, and to the best of our knowledge, they have not been studied as such in a public healthcare setting. It is important to synthesize these variables in a model to see the interrelationships among them and to discover how they affect each other. Our research model is built on the theoretical framework of Nahapiet and Ghoshal [3] and suggests the importance of social relationships in innovation activities and intellectual capital. Our findings resonate with prior research and show that social capital does indeed affect performance, but only indirectly.

Second, we investigate the serial multiple-mediation of innovation activities and intellectual capital on the social capital and performance

Table A.2
Measurement model validation-confirmatory factor analysis results.

	Items	Std. Factor Loadings[a] (EFA)	Regression Weights	AVE[b]	Cronbach's Alpha	CR[c]
Social Capital	**SC**			**0.723**	**0.932**	**0.887**
Structural Social Capital	**SSC**		**0.866**	**0.651**	**0.897**	**0.902**
In our hospital, we can directly contact any employee concerning important matters.	SSC1	0.781	0.691			
In our hospital, we know whom to contact to get things accomplished.	SSC2	0.699	0.693			
We are able to work together to solve the problems in our hospital.	SSC3	0.791	0.911			
There is two-way communication among our employees rather a one than one-way communication.	SSC4	0.787	0.888			
Our employees are frequently in contact with each other.	SSC5	0.619	0.823			
Relational Social Capital	**RSC**		**0.813**	**0.565**	**0.870**	**0.863**
Social relationships in our hospital can be characterized as close, personal interaction	RSC1	0.734	0.677			
Social relationships in our hospital are based on mutual respect.	RSC2	0.699	0.891			
Social relationships in our hospital are based on mutual trust.	RSC3	0.775	0.859			
Social relationships in our hospital can be characterized as personal friendship.	RSC4	0.751	0.543			
In our hospital, we respect each other's professional competencies.	RSC5	0.622	0,738			
Cognitive Social Capital	**CSC**		**0.872**	**0.561**	**0.870**	**0.864**
In our hospital, we share common professional/business values.	CSC1	0.716	0.741			
In our hospital, we interpret work-related phenomena similarly.	CSC2	0.799	0.716			
In our hospital, we share a common jargon.	CSC3	0.717	0.657			
In our hospital, we share a common vision.	CSC4	0.694	0.856			
In our hospital, we share a common understanding of doing things.	CSC5	0.757	0.753			
Intellectual Capital	**IC**			**0.736**	**0.948**	**0.892**
Structural Capital	**IC-SC**		**0.927**	**0.608**	**0.926**	**0.925**
In our hospital, there are protocols and procedures we follow in the work processes.	IC-SC1	0.724	0.822			
In our hospital, there is coordination and integration among different units/departments.	IC-SC2	0.726	0.829			
The policies and procedures in our hospital support the development of innovation.	IC-SC3	0.760	0.837			
The structures and processes in our hospital allow easy access to information.	IC-SC4	0.744	0.806			
The environment in our hospital supports new ideas.	IC-SC5	0.657	0.795			
In our hospital, knowledge is converted into organizational knowledge by means of computer databases, manuals, e-mails.	IC-SC6	0.724	0.643			
Our hospital's culture (stories, rituals) contains valuable ideas, ways of performing work.	IC-SC7	0.676	0.734			
Our hospital tries to improve itself by obtaining new licenses and certificates.	IC-SC8	0.688	0.752			
Human Capital	**IC-HC**		**0.910**	**0.579**	**0.912**	**0.905**
Our employees' competence and knowledge level are above the industry average.	IC-HC1	0.788	0.642			
Our employees are experts in their fields.	IC-HC2	0.723	0.622			
Our hospital provides an environment that supports employees who want to improve their education level and skills.	IC-HC3	0.596	0.818			
Our hospital encourages employees to think and question.	IC-HC4	0.671	0.839			
In our hospital, employees have the opportunity to share their experience and knowledge with their coworkers.	IC-HC5	0.713	0.813			
Employees in our hospital share their new ideas and creativity with their coworkers.	IC-HC6	0.675	0.768			
The environment in our hospital allows employees to voice their opinions without any fear.	IC-HC7	0.670	0.792			
Customer Capital	**IC-CC**		**0.724**	**0.529**	**0.855**	**0.846**
Our hospital has a patient-oriented/patient-focused approach.	IC-CC1	0.732	0.646			
Patient satisfaction surveys generally indicate that our patients are satisfied with our hospital.	IC-CC2	0.685	0.648			
Our patients are loyal to our hospital.	IC-CC3	0.707	0.606			
We care about and take the feedback from our patients seriously.	IC-CC4	0.787	0.825			
We actively try to solve our patients' problems in a faster and more effective manner.	IC-CC5	0.729	0.870			
Innovation activities	**INNO**			**0.610**	**0.934**	**0.934**
Our hospital takes advantage of technological developments to provide superior service to our patients.	INNO1	0.81	0.771			
Our hospital performs activities to improve its hospitality services.	INNO2	0.758	0.695			
Our hospital performs activities to reduce patient wait times.	INNO3	0.817	0.767			
Our hospital performs activities to reduce the backlog.	INNO4	0.852	0.806			
Our hospital performs activities to reduce risks and improve patient safety.	INNO5	0.843	0.820			
Our hospital performs activities to improve employee safety.	INNO6	0.775	0.763			
Our hospital performs activities to provide increased access to health care services.	INNO7	0.846	0.826			
Our hospital takes advantage of new developments to reduce costs.	INNO8	0.778	0.763			
Our hospital uses new methods and technology to improve clinical outcomes.	INNO9	0.830	0.812			
Performance	**PERF**			**0.519**	**0.864**	**0.865**
Healthcare services performance	HSP	0.816	0.756			
Administrative services performance	ASP	0.827	0.798			
Employee satisfaction rate	ESR	0.764	0.742			
Patient satisfaction rate	PSR	0.67	0.597			
Financial services performance	FSP	0.72	0.670			
Education/Training performance	ETP	0.797	0.742			

All the factor loadings are statistically significant at $p<0.01$.

[a]Std. Factor loadings: Standardized factor loadings.

[b]AVE: Average variance extracted.

[c]CR: Composite reliability.

relationship, which has not been done before. Our results confirm that social capital positively impacts innovation activities, which have a positive effect on intellectual capital, which in turn positively influences performance. We extend on prior research that investigates the effect of social capital on organizational performance [3,15,44,67] and contribute to the extant literature by further investigating 'how' social capital affects organizational performance. By including closely related variables like innovation activities and intellectual capital, we attempt to uncover the underlying mechanism in the social capital and performance relationship. The results confirm the serial multiple-mediation of innovation activities and intellectual capital in social capital and performance relationship. Hence, our findings show that social capital plays an important role during innovation activities, which contribute to the organizational intellectual capital, which in turn positively affects organizational performance. Our findings also suggest that intellectual capital is the key mediator variable between social capital and organizational performance. Both social capital and innovation activities impact organizational performance only through the mediation of intellectual capital.

Third, we depart from the common practice of investigating the effect of intellectual capital on innovation activities; instead, we investigate the effect of externally initiated government-led innovation activities on hospitals' intellectual capitals. Even though the potential contribution of innovation activities to the development of new knowledge and learning, i.e., new intellectual capital, is supported by theory [5,19,68–70] empirically investigating this relationship is a novel one. Our findings show that innovation activities contribute to organizational performance by the positive mediation of intellectual capital.

6.1. Limitations and directions for future research

This study develops a complex theoretical model to investigate the interrelationships among social capital, innovation activities, intellectual capital, and organizational performance and empirically tests it with reliable data. Even though we believe that our model and empirical analysis are sound, we realize that it is not free of some limitations. First of all, this research was conducted in public hospitals operating in Turkey, which may restrict the generalizability of the findings to other organizational settings in the private sector. It would be illuminating to repeat this research in a different private sector and compare the outcomes. Second, while we have two mediators – innovation activities and intellectual capital – between social capital and organizational performance, it would strengthen the explanatory power of the model if additional mediators (like organizational learning and knowledge sharing) between innovation activities and intellectual capital were included in the model. This would have shed some additional light on the way innovation activities affect intellectual capital.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

See Tables A.1 and A.2.

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