

## RESHAPING THE ORGANIZATIONAL PERFORMANCE IN THE HOSPITALITY SECTOR: THE ROLE OF INTELLECTUAL CAPITAL AND SUPPLY CHAIN EFFICIENCY

**Mehwish Rasool**

Department of Management Sciences, The Islamia University of Bahawalpur

[mehwishrasooldms@gmail.com](mailto:mehwishrasooldms@gmail.com)

**Hafiz Muhammad Farhan**

Assistant Professor, Department of Management Sciences, The Islamia University of

Bahawalpur

[muhammad.farhan@iub.edu.pk](mailto:muhammad.farhan@iub.edu.pk)

### **Abstract**

*The current research examines the association between intellectual capital (IC) and organizational operational performance in Pakistan's hospitality sector, with supply chain efficiency as a boundary condition. This study investigates the effects of structural capital, relational capital, and human capital components of IC on operational performance indicators such as quality of services, utilization of resources, and efficiency in operation, based on the resource-based view (RBV) theory. An organized survey was developed to gather information from 312 top executives and managers working in different hotels and resorts in Pakistan. The results show that operational performance is positively influenced by all three elements of intellectual capital. Furthermore, this link is strongly moderated by supply chain efficiency, which amplifies the beneficial impact of intellectual capital on operational results. The study emphasizes the value of multifaceted strategies for handling intellectual capital in light of the particular challenges of operation faced by Pakistan's hotel industry.*

**Keywords:** Supply chain efficiency; intellectual capital; structural capital; human capital; relational capital, operational performance; hospitality industry,

### **1. Introduction and background**

The COVID-19 crisis significantly affected the hospitality industry's global supply chains by causing shortages of key inputs, logistics breakdowns, unpredictable demand patterns, and increasing the urgency of resilient strategies within emerging economies like Pakistan (Goh et al., 2021; Jones and Comfort, 2020). These shocks increased the existing problems, such as resource scarcity, operational bottlenecks, and increasing need for hygienic and sustainable services in recovery stages in Pakistan, where the hotel and restaurant sector contributed significantly to GDP, employment, and revenue in the tourism sector (Pakistan Economic Survey, 2023).

Under the social distancing restrictions, restaurants turned to delivery formats, and supply chains collapsed amid border shutdowns and spoilage of perishable items, diminishing the quality of service and customer satisfaction as shown by declining scores on the American Customer Satisfaction Index (Goh et al., 2021). In emerging markets such as Pakistan, the industry has seen a reduction in employment levels by almost half at its lowest point, and the industry has been struggling to recover due to labor shortages, skills shortages, and continued cash flow pressures, leading to changes such as online revenue tools and staycation services locally (TPG Hotels, 2023; Deloitte, 2020).

Intellectual capital (IC), including human capital (skills and expertise), structural capital (systems and processes), and relational capital (networks and partnerships), has now been shown to be essential in overcoming such crises and regaining competitive advantage in hospitality (Alhammad et al., 2018; Al-Omari, 2017). Adaptive knowledge sharing and innovation are based on human capital that allows frontline personnel to apply health-related protocols and service pivots (Alhammad et al., 2018). Process improvements such as digitalizing inventory to cushion supply shock are enabled through structural capital, whereas relational capital strengthens relationships with suppliers and client retention.

Supply chain efficiency, realized by smooth coordination of procurement, production, and delivery, will be synergistic to IC in order to control costs, resources, and maintenance of service delivery in hotels and restaurants (Deloitte, 2020; Jardon and Martos, 2009). IC provides stronger collaborative supply chains post-COVID, and relational aspects increase information flows and structural innovations to sustain practices that reduce vulnerability, such as inefficient working capital (Alhammad et al., 2018). This interaction is not empirically researched in the context of the hospitality sector in Pakistan, especially in terms of the moderating role of supply chain efficiency in the IC-performance relationship, which is a key gap in realizing resilient approaches to developing environments (Al-Omari, 2017).

### **1.1 Significance of the Study**

The paper helps to bridge important gaps in the literature on intellectual capital and organizational performance in the hospitality industry, especially in the post-COVID period. Although a significant body of research has investigated the interactions between intellectual capital and financial performance (Andreeva and Garanina, 2016; Xu and Li, 2019), there is little empirical evidence on how intellectual capital impacts operational performance, such as service quality, efficiency, and customer satisfaction, particularly in the hospitality sector (Alhammad et al., 2018; Al-Omari, 2017). Recent research points out that the current literature is inclined to focus on financial or aggregate performance indicators but does not pay sufficient attention to the use of intellectual capital in maintaining operations resilience in the face of post-pandemic disruptions in supply chains and demand fluctuations (Bontis et al., 2024; Mihalache et al., 2024). On the same note, the moderating role of the supply chain efficiency on the intellectual capital-performance nexus is underresearched in the literature, although the agile and resilient supply chains are gaining scholarly attention in the post-COVID post-recovery (Dubey et al., 2020; Khan et al., 2021). This research addresses this gap by placing the efficiency of the supply chain as a boundary condition and shedding light on how the knowledge-based resources can produce better results when integrated into an efficient operational system (Mihalache et al., 2024).

Moreover, the majority of the intellectual capital literature research has been carried out in the developed economies (Bontis et al., 2015; Kianto et al., 2017), and very little scholarly focus has been placed on the emerging markets such as Pakistan, where institutional constraints, resource scarcity, and post-pandemic pressures have fundamentally changed the functioning of intellectual capital (Asiaei et al., 2024). This research will offer context-specific empirical data on the dynamics of intellectual capital operation in the conditions of economic vulnerability and environmental uncertainty by focusing on the hospitality sector in Pakistan (Bontis et al., 2024). In practical terms, the results provide practical advice to managers aiming to focus on investments in human capital to enhance adaptability, structural capital to enhance processes, and relational capital to enhance supplier and customer relationships, and in the same breath, educate policymakers on how to create resilient and knowledge-based tourism ecosystems in developing economies.

### **1.2 Scope of the Study**

The hotel and resorts in Pakistan employing more than fifty people are the subject of this study. The geographic area includes well-known tourist locations like Swat, Murree and Gilgit-Baltistan, as well as important urban hubs like Karachi, Lahore, and Islamabad. The research takes into account several operational performance metrics, such as operational expenses, creativity in processes, utilization of resources in an efficient way, and improvement of quality of service.

The study looks at relational capital (relationships with vendors, consumers, and other outside partners), structural capital (organizational systems, processes, and records), and human capital (employee skills, knowledge, and capabilities) as parts of intellectual capital. Measures of

inventory control, relationships with vendors, logistical cooperation, and acquisition efficacy are used to evaluate supply chain efficiency.

#### **1.4 Research Questions**

Based on the identified research gaps and the significance of the study, this study aimed to address the following research question:

How does intellectual capital influence organizational performance in the hospitality sector of Pakistan, and to what extent does supply chain efficiency moderate this relationship in the post-COVID operational environment?

### **2. Theory and Hypothesis Development**

#### **2.1 Theoretical Framework**

##### **2.1.1 Resource-Based View (RBV)**

Resource-based view (RBV) provides the theoretical basis of the competitive advantage and the persistence of performance through the internal resources (Barney, 1991; Wernerfelt, 1984). RBV assumes the heterogeneous nature of firms through the set of resources and capabilities, which, when valuable, rare, inimitable, and supported by organizations (VRIO framework), create lasting competitive advantages (Barney, 1991; Akwesi Assensoh-Kodua, 2019). Intellectual capital, which includes human capital, structural capital, and relational capital, represents these VRIO qualities of being an inimitable, immobile asset that builds up over time through firm-specific development (Bontis, 1998; Reed et al., 2006; Dahash and Al-Dirawi, 2018). In contrast to commoditized tangible resources, which can be easily purchased by competitors as a part of the external markets, intellectual capital makes it possible to create dynamic values, especially in knowledge-intensive industries, where the strategic utilization of these aspects may create significant differentiation (Chahal & Bakshi, 2015). Intellectual capital is of paramount strategic significance within the hospitality industry due to the intangible and co-produced nature of services, as well as real-time customer interaction (Costa et al., 2024; Fitzpatrick et al., 2013). Service innovation and adaptability are driven by human capital, operational consistency is ensured by structural capital (codified systems and organizational culture), and long-lasting loyalty is established by relational capital (network of suppliers and customers), and the combination of these three components provides higher performance and competitiveness (Nieves and Quintana, 2018; Bontis et al., 2024). The current study is thus based on this framework in the analysis of how the dimensions of intellectual capital with supply chain efficiency as moderating factors drive organizational performance in the post-COVID hospitality environment in Pakistan.

#### **2.2 Intellectual Capital and Its Components**

Structural capital, human capital, and relational capital are the three separate but connected components that are often thought of as making up intellectual capital (Bontis, 1998; Edvinsson & Malone, 1997).

##### **2.2.1 Human Capital**

The information, skills, expertise, and abilities that each member of a company possesses are collectively referred to as human capital (Bontis, 1998). It encompasses both explicit knowledge found in educational institutions and training and tacit knowledge found in experiencing learning and intuition that workers use to their jobs (Nonaka & Takeuchi, 1995). Given the high-contact nature of service delivery and the significance of interactions between staff and clients in determining the quality of services, human capital is especially important in the hospitality sector (Nieves & Quintana, 2018; FitzPatrick et al., 2013).

Prior studies have shown that human capital and a number of organizational outcomes, including creative thinking and are positively correlated (Subramaniam & Youndt, 2005), productivity (Crook et al., 2011), and financial performance (Asiaei & Jusoh, 2015). In the hospitality context, studies have found that employee knowledge and skills significantly influence service quality and customer satisfaction (Zeglat et al., 2014; Yen et al., 2016).

However, the particular effect of human capital on operational performance measures in Pakistan's hotel business still unstudied.

### **2.2.2 Structural Capital**

The organizational information ingrained in the structures of an organization's procedures, schedules, and equipment is referred to as structural capital (Bontis, 1998; Edvinsson & Malone, 1997). It consists of records, documents, systems for information, frameworks for organization, and exclusive technology that facilitate organizational learning and efficient use of human resources (Youndt et al., 2004). Unlike human capital, structural capital remains with the organization even when employees leave (Bontis et al., 2000).

In the hospitality industry, structural capital encompasses service delivery processes, reservation systems, knowledge management platforms, and other organizational systems that standardize operations and enhance efficiency (Zeglat et al., 2014). Prior studies have connected enhanced innovative skills to structural capital (Subramaniam & Youndt, 2005), operational efficiency (Kianto et al., 2017), and organizational performance (Andreeva & Garanina, 2016). The precise effect of structural capital on operational performance in the hotel industry, particularly in emerging nations, has not been extensively studied.

### **2.2.3 Relational Capital**

The value that a corporation derives from its connections with other parties involved, such as collaborators, vendors, consumers, and other participants in the network, is known as relational capital. (Bontis, 1998). It includes networks of distribution, cooperative agreements, brand recognition, devotion from clients, and other relational assets that support the generation of organizational value (Inkinen, 2015).

Relational capital is especially crucial in the hotel sector because of the importance of destination networks, vendor partnerships, and interactions with clients in providing services (FitzPatrick et al., 2013). Relational capital and customer happiness have been positively correlated in prior research (Kim et al., 2012), innovation performance (Menor et al., 2007), and financial outcomes (Bontis et al., 2015). However, more research is necessary to determine the precise effect of relational capital on operational performance measures in the hotel industry.

## **2.3 Supply Chain Efficiency in the Hospitality Industry**

The optimization of resource use, minimizing expenses, and worth optimization throughout the whole supply chain network is referred to as supply chain efficiency (Christopher, 2016). Supply chain management in the hospitality sector entails organizing the acquisition, delivery, and retention of a range of inputs, such as food and drink, bed linens, bathroom amenities, and other hospitality products (Fantazy et al., 2010).

Effective vendor connections, good management of stocks, expedited purchasing processes, and successful logistics coordination are features associated with efficient supply chains in the hospitality industry (Doğan & Aslan, 2020). In the hospitality sector, prior studies have shown that supply chain efficiency can have a major impact on the operational results including client satisfaction, cutting expenses, and service quality (Fantazy et al., 2010; Shi & Liao, 2015).

The significance of supply chain management in the hospitality industry has been emphasized by numerous studies. For instance, Fantazy et al. (2010) discovered that the operational performance of hotels in Canada was greatly impacted by supply chain strategy. Similarly, Shi and Liao (2015) shown that supply chain integration improved Taiwanese hotels' operational effectiveness and quality of service. However, there is still a dearth of study on how supply chain efficiency and intellectual capital interact to affect operational performance, especially in emerging economies like Pakistan.

## **2.4 Operational Performance in the Hospitality Industry**

In the hotel and restaurant industry, operational performance includes a range of indicators pertaining to process optimization, efficient use of resources, and the efficacy of service

delivery (Fantazy et al., 2010; Nieves & Quintana, 2018). Level of service, client reaction time, utilization of resources, operating expenses, and process innovation are examples of key performance indicators (Assaf & Cvelbar, 2010; Zeglat et al., 2014).

Procedures related to human resources are one of the aspects that have been found to influence operational performance in the hospitality sector by prior study (Yen et al., 2016), technological adoption (Sigala, 2005), quality management (Tari et al., 2010), and supply chain management (Fantazy et al., 2010). However, more research is needed to determine the precise contribution of intellectual capital elements to operational results as well as the possible moderating effect of supply chain efficiency in this relationship.

## **2.5 Hypothesis Development**

Based on the theoretical foundations and literature review, the following hypotheses are developed:

### **2.5.1 Direct Effects of Intellectual Capital Components on Operational Performance**

#### **Human Capital and Operational Performance**

In the hospitality sector, human capital, which includes staff expertise, skills, and abilities is essential to operational effectiveness and provision of services (Nieves & Quintana, 2018). Workers with the appropriate expertise and skills can increase the quality of service, lower shortcomings, make better use of resources, and help improve processes (Yen et al., 2016; Zeglat et al., 2014). Human capital may be especially crucial for operational success in Pakistan's hospitality sector, where customs and individual service are highly prized. Prior research in a variety of settings has discovered a positive correlation between operational results and human capital (Crook et al., 2011; Yen et al., 2016). Therefore, it is hypothesized that:

H1: Human capital positively influences operational performance in Pakistan's hospitality industry.

#### **Structural Capital and Operational Performance**

The structure for efficient use of human capital and operational uniformity is provided by structural capital, which includes organizational structures, procedures, and material (Bontis, 1998). In the hotel business, well-constructed execution of service procedures, systems for information, and organizational processes can promote operational efficiency, reduce unpredictability, and improve resource allocation (Zeglat et al., 2014).

Prior studies have indicated that structural capital plays a role in operational results including profitability, quality, and efficiency (Kianto et al., 2017; Andreeva & Garanina, 2016). Structural capital may be crucial in improving operational performance in the Pakistani hotel and restaurant sector, where resource limitations and inefficient processes are frequent problems. Therefore, it is hypothesized that:

H2: Structural capital positively influences operational performance in Pakistan's hospitality industry.

#### **Relational Capital and Operational Performance**

Operational results in the hotel sector can be greatly impacted by relational capital, which is the worth obtained from connections with outside parties (FitzPatrick et al., 2013). While cooperative vendor connections improve resource availability and efficiency in procurement, effective interactions with clients encourage repeat business and feedback for service enhancements (Kim et al., 2012; Menor et al., 2007).

Relational capital may be especially beneficial for operational excellence in Pakistan's hospitality industry, where interpersonal connections and networks are crucial to corporate operations. Relational capital and a number of achievement metrics have been positively correlated in earlier research (Bontis et al., 2015; Kim et al., 2012). Therefore, it is hypothesized that:

H3: Relational capital positively influences operational performance in Pakistan's hospitality industry.

### 2.5.2 Moderating Effect of Supply Chain Efficiency

The optimization of resource flows and coordination systems throughout the manufacturing channel is reflected in supply chain efficiency (Christopher, 2016). Effective supply chains reduce expenses for operation, guarantee timely accessibility to resources, and improve delivery of services abilities (Fantazy et al., 2010; Doğan & Aslan, 2020).

Both the resource-based view and the dynamic capabilities viewpoint can be used to understand how supply chain efficiency may moderate the interaction among intellectual capital and operational performance. The operational foundation that allows for the effective deployment and leveraging of intellectual capital resources is provided by efficient supply chains (Huo, 2012). In addition, by enabling accessibility to assets, lowering the cost of transactions, and enhancing collaboration, supply chain efficiency can improve the conversion of information assets into operational outputs (Flynn et al., 2010).

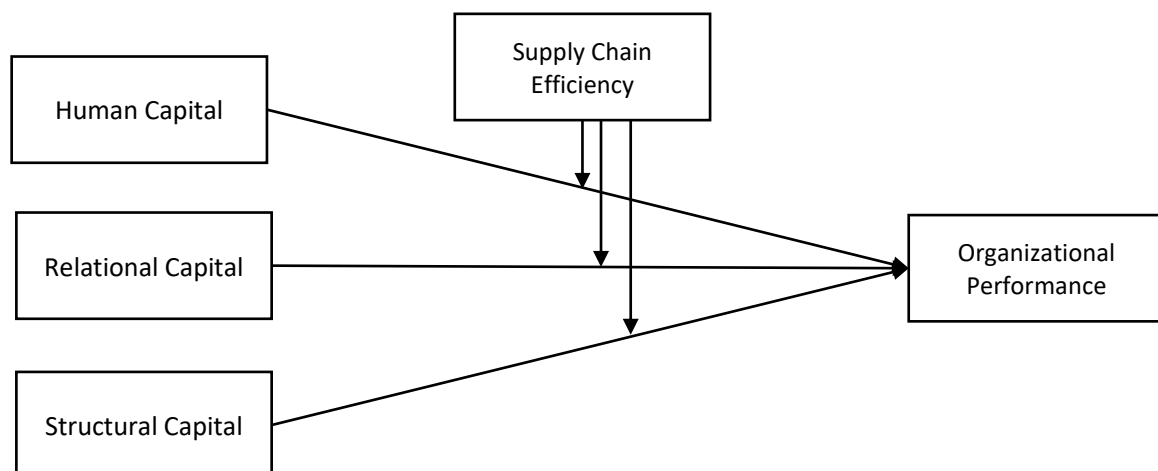
In particular, by guaranteeing that workers have access to the resources they need and can concentrate on beneficial tasks rather than handling supply interruptions, supply chain efficiency may improve the effect of human capital on operational performance (Huo, 2012). In a similar vein, effective supply chains can support structural capital by offering the operational framework for putting standard procedures and systems into place (Flynn et al., 2010). By promoting cooperative agreements and knowledge exchange among supply chain shareholders and effective supply chains can enhance the advantages of external ties for relational capital (Cao & Zhang, 2011).

Based on these theoretical arguments and empirical evidence from related fields, it is hypothesized that:

**H4a:** The connection among operational performance and human capital is positively moderated by supply chain efficiency, so that a high level of supply chain efficiency strengthens the positive impact of human capital on operational performance.

**H4b:** The association among structural capital and operational performance is favorably moderated by supply chain efficiency, so that a high level of supply chain efficiency amplifies the favorable impact of structural capital on operational performance.

**H4c.:** Supply chain efficiency positively moderates the relationship between relational capital and operational performance, such that the positive effect of relational capital on operational performance is stronger when supply chain efficiency is high.



## Figure: Proposed framework

### Research Framework

#### 3. Methodology

##### 3.1 Research Design

This study employs a quantitative research approach with a cross-sectional survey design to investigate the hypothesized relationships. The quantitative approach is appropriate for testing the hypothesized relationships and examining the moderating role of supply chain efficiency through statistical analysis (Creswell & Creswell, 2018). The cross-sectional design allows for data collection at a single point in time, providing a snapshot of the current state of intellectual capital, supply chain efficiency, and operational performance in the hospitality industry (Saunders et al., 2019).

##### 3.2 Population and Sampling

The target population for this study consists of hospitality establishments in Pakistan, including hotels and resorts with more than 50 employees. The focus on larger establishments ensures that the organizations have formalized structures, processes, and supply chain mechanisms relevant to the study variables (Assaf & Cvelbar, 2010).

A stratified random sampling approach was adopted to ensure representation across different regions and establishment types. The sampling frame was developed using directories from the Pakistan Hotels Association, Tourism Department of Pakistan, and other industry databases. The sample was stratified based on geographical location (major urban centers and tourist destinations) and establishment type (hotels, resorts, and restaurant chains). A sample size of 312 was determined using Krejcie and Morgan's (1970) formula, with a 95% confidence level and a 5% margin of error.

##### 3.3 Data Collection Procedures

Data was collected through a structured questionnaire administered to senior managers or executives responsible for operations in the selected hospitality establishments. The respondents included general managers, operations managers, supply chain managers, and human resource managers who possessed comprehensive knowledge about the organization's intellectual capital, supply chain practices, and operational performance. Initial contact was made through official emails and phone calls, explaining the purpose of the study and requesting participation. The questionnaires were distributed both electronically (via email and online survey platforms) and in-person through research assistants. Follow-up contacts were made to improve the response rate. Out of 450 questionnaires distributed, 334 were returned (74.2% response rate). After screening for incomplete responses and outliers, 312 valid questionnaires were retained for analysis, representing a 69.3% usable response rate.

#### 4. Data Analysis and Results

##### 4.1 Descriptive Statistics

Table 1 presents the demographic profile of the sampled organizations. The majority of respondents were from hotels (59.6%), followed by resorts (21.5%) and restaurant chains (18.9%). In terms of organization size, 42.3% had 101-200 employees, while 28.8% had 201-500 employees. Most establishments (71.2%) were located in urban centers, with the remaining 28.8% in tourist destinations. Regarding star ratings, 4-star establishments represented the largest category (43.3%), followed by 3-star (32.4%) and 5-star (24.3%).

**Table 1: Demographic Profile of Sample Organizations**

Characteristic	Category	Frequency	Percentage
Establishment Type	Hotel	186	59.6%
	Resort	67	21.5%
	Restaurant	59	18.9%
Organization Size	50-100	64	20.5%
	101-200	132	42.3%
	201-500	90	28.8%
	>500	26	8.4%
Location	Urban	222	71.2%
	Tourist	90	28.8%
Organization Age	<5 years	54	17.3%
	5-10 years	93	29.8%
	11-20 years	112	35.9%
	>20 years	53	17.0%

Table 2 provides descriptive statistics and correlations for the main variables. The mean scores for human capital ( $M = 3.67$ ,  $SD = 0.74$ ), structural capital ( $M = 3.42$ ,  $SD = 0.81$ ), and relational capital ( $M = 3.83$ ,  $SD = 0.69$ ) indicate moderate to high levels of intellectual capital components in the sampled organizations. Supply chain efficiency ( $M = 3.38$ ,  $SD = 0.78$ ) and operational performance ( $M = 3.58$ ,  $SD = 0.72$ ) also showed moderate to high scores.

Correlation analysis revealed significant positive correlations between all intellectual capital components and operational performance, with human capital showing the strongest correlation ( $r = 0.61$ ,  $p < 0.01$ ), followed by relational capital ( $r = 0.54$ ,  $p < 0.01$ ) and structural capital ( $r = 0.48$ ,  $p < 0.01$ ). Supply chain efficiency was also significantly correlated with operational performance ( $r = 0.57$ ,  $p < 0.01$ ) and all intellectual capital components.

**Table 2: Descriptive Statistics and Correlations**

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. HC	3.67	0.74	(0.89)							
2. SC	3.42	0.81	0.56	(0.87)						
3. RC	3.83	0.69	0.48	0.44	(0.85)					
4. SCE	3.38	0.78	0.42	0.51	0.47	(0.90)				
5. OP	3.58	0.72	0.61	0.48	0.54	0.57	(0.91)			

#### 4.2 Measurement Model Assessment

Confirmatory Factor Analysis (CFA) was conducted to validate the measurement model. After removing items with factor loadings below 0.60 (3 items), the final model demonstrated satisfactory fit:  $\chi^2/df = 2.18$ ,  $CFI = 0.93$ ,  $TLI = 0.92$ ,  $RMSEA = 0.057$ , and  $SRMR = 0.048$ .

Reliability was assessed using Cronbach's alpha coefficients, which ranged from 0.85 to 0.91, exceeding the recommended threshold. Reliability was assessed using Cronbach's alpha coefficients, which ranged from 0.85 to 0.91, exceeding the recommended threshold of 0.70 (Hair et al., 2019). Convergent validity was established through Average Variance Extracted (AVE) values, which ranged from 0.57 to 0.68, exceeding the threshold of 0.50, and Composite Reliability (CR) values ranging from 0.88 to 0.93, exceeding the threshold of 0.70 (Fornell & Larcker, 1981).

Discriminant validity was confirmed as the square root of AVE for each construct exceeded its correlation with other constructs, and the Heterotrait-Monotrait (HTMT) ratio values were below 0.85 (Henseler et al., 2015). Table 3 presents the results of convergent and discriminant validity assessment.

**Table 3: Convergent and Discriminant Validity Assessment**

Construct	CR	AVE	MSV	HC	SC	RC	SCE	OP
HC	0.92	0.63	0.38	0.79				
SC	0.90	0.57	0.31	0.55	0.76			
RC	0.88	0.60	0.29	0.47	0.43	0.77		
SCE	0.93	0.68	0.33	0.41	0.50	0.46	0.82	
OP	0.93	0.65	0.38	0.61	0.47	0.54	0.56	0.81

The Harman's single factor technique was used to examine Common technique variation (CMV). The first component accounted 28.7% of the error variation, which was less than the suggested threshold of 50%, indicating that CMV might not be a significant issue in this study (Podsakoff et al., 2003). Additionally, the common latent factor data showed just 12.3%, indicating that CMV was not a major worry in this study (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003)

#### 4.3 Hypothesis Testing

Hierarchical multiple regression analysis was employed to test the hypothesized relationships. Table 4 presents the results of the regression analysis.

**Table 4: Hierarchical Regression Analysis Results**

Variables	Model 1	Model 2	Model 3	Model 4
<i>Control Variables</i>				
Organization Size	0.14	0.06	0.05	0.05
Organization Age	0.12	0.05	0.04	0.04
Establishment Type (Hotel)	0.11	0.06	0.05	0.04
Establishment Type (Resort)	0.09	0.04	0.04	0.03
Location Type	0.08	0.03	0.02	0.02
Star Rating	0.19	0.09	0.06	0.05
<b>Independent Variables</b>				
Human Capital (HC)		0.40	0.33	0.31
Structural Capital (SC)		0.21	0.16	0.15
Relational Capital (RC)		0.29	0.24	0.23
<i>Moderator</i>				

Variables	Model 1	Model 2	Model 3	Model 4
Supply Chain Efficiency (SCE)			0.28	0.25
<b>Interaction Terms</b>				
HC × SCE				0.19
SC × SCE				0.14
RC × SCE				0.17
R <sup>2</sup>	0.14	0.51	0.57	0.62
ΔR <sup>2</sup>	0.14	0.37	0.06	0.05
F	8.24	35.76	38.43	32.79
ΔF	8.24	67.43	34.52	10.45

#### 4.3.1 Direct Effects of Intellectual Capital Components

Model 1's control variables accounted for 14% of the variance in operational performance, with notable effects from star grade, organization age, and size. By adding the intellectual capital components, Model 2 increased the variance that is clarified to 51% ( $\Delta R^2 = 0.37$ ,  $p < 0.001$ ). H1 was supported by the fact that human capital had the greatest beneficial impact on operational performance ( $\beta = 0.40$ ,  $p < 0.001$ ). H3 was supported by relational capital, which likewise showed a substantial, favorable effect ( $\beta = 0.29$ ,  $p < 0.001$ ). Similarly, structural capital supported H2 by having a beneficial impact on operational performance ( $\beta = 0.21$ ,  $p < 0.01$ ). These findings show that operational effectiveness in Pakistan's hospitality sector is greatly influenced by all three components of intellectual capital, with human capital having the greatest influence.

#### 4.3.2 Moderating Effect of Supply Chain Efficiency

Model 3 enhanced supply chain efficiency, resulting in an increase in the explained variance to 57% ( $\Delta R^2 = 0.06$ ,  $p < 0.001$ ), with supply chain efficiency demonstrating a significant direct impact on operational performance ( $\beta = 0.28$ ,  $p < 0.001$ ). Model 4 incorporated the interaction terms, which further raised the explained variance to 62% ( $\Delta R^2 = 0.05$ ,  $p < 0.001$ ).

The interaction between human capital and supply chain efficiency was both significant and positive ( $\beta = 0.19$ ,  $p < 0.01$ ), thereby supporting H4a. Likewise, the interactions between structural capital and supply chain efficiency ( $\beta = 0.14$ ,  $p < 0.05$ ) and between relational capital and supply chain efficiency ( $\beta = 0.17$ ,  $p < 0.01$ ) were also significant and positive, thereby supporting H4b and H4c, respectively. To gain a deeper understanding of the nature of these moderating effects, simple slope analyses were performed at high (+1 SD) and low (-1 SD) levels of supply chain efficiency. The findings, illustrated in Figures 2, 3, and 4, indicated that the positive associations between all components of intellectual capital and operational performance were more pronounced when supply chain efficiency was high compared to when it was low.

#### 4.4 Structural Equation Modeling Results

To assess the overall model and evaluate the proposed relationships concurrently, structural equation modeling (SEM) was performed utilizing AMOS. The structural model exhibited an acceptable fit:  $\chi^2/df = 2.24$ , CFI = 0.92, TLI = 0.91, RMSEA = 0.059, and SRMR = 0.051. The results from the SEM largely corroborated the outcomes of the regression analysis, offering further validation for all hypotheses.

### 5. Discussion and Conclusion

#### 5.1 Discussion of Findings

With an emphasis on the moderating effect of supply chain efficiency, this study investigated the relationship between intellectual capital elements and operational performance in Pakistan's hotel sector. The results offer a number of significant observations that advance our

comprehension of the connection among operational outcomes and information resources found in the hospitality industry.

### **5.1.1 Direct Effects of Intellectual Capital Components**

The findings show that operational performance in Pakistan's hotel and restaurant industry is positively impacted by all three elements of intellectual capital: relational, structural, and human capital. These results are consistent with prior empirical studies emphasizing the significance of knowledge resources for organizational performance as well as the resource-based paradigm (Barney, 1991; Bontis et al., 2015; Kianto et al., 2017; Nieves & Quintana, 2018).

The greatest determinant of operational performance was found to be human capital, highlighting the vital role of worker competencies, knowledge, and skills play in the hospitality sector. This result is in line with earlier studies that highlighted the importance of human capital in ensuring customer happiness and service quality (Yen et al., 2016; Zeglat et al., 2014). Human capital seems to be an especially important resource for efficient operations in Pakistan's hotel sector, where heritage and private service are highly prized.

Relational capital has an important beneficial effect on operational performance, which emphasizes how crucial network linkages, vendor partnerships, and customer relationships are in the hotel industry. This is consistent with earlier research showing favorable relationships between relational capital and a range of performance metrics (Bontis et al., 2015; Kim et al., 2012). The capacity to establish and preserve solid relationships with outside parties seems to be a crucial advantage for improving operating results in Pakistan's relationship-oriented corporate culture.

Although it had a significantly less impact than relational and human capital, structural capital also had a strong positive influence on operational success. This result confirms other studies showing that buildings, procedures, and organizational frameworks support operational efficiency and standardization (Kianto et al., 2017; Andreeva & Garanina, 2016). Structural capital offers the organizational foundation for efficient use of other resources in Pakistan's hotel sector, where resource limitations and inefficient processes are frequent problems.

### **5.1.2 Moderating Role of Supply Chain Efficiency**

This study's determination of supply chain efficiency as a critical mediator in the relationship among operational performance and intellectual capital components is one of its main contributions. The findings show that when supply chain efficiency is high, the benefits of relational, structural, and human capital on operational performance are more pronounced. Theoretical considerations from the resource-based view and dynamic capabilities perspectives are supported by these findings, which imply that effective supply chains offer the operational framework for the effective deployment and leveraging of intellectual capital resources (Huo, 2012; Flynn et al., 2010).

The largest moderating effect was seen in human capital, indicating that supply chain efficiency in particular enhances employees' ability to contribute to operational performance. Effective supply chains allow employees to focus on value-generating activities rather than managing supply disruptions, utilizing their skills to the fullest (Huo, 2012). Similarly, the powerful moderating effects for relational and structural capital suggest that supply chain efficiency improves outside relationships and organizational structures by providing the operational framework for implementing standardized procedures and encouraging collaborative agreements with supply chain partners. (Flynn et al., 2010; Cao & Zhang, 2011).

These results demonstrate the value of a combined strategy for supply chain efficiency and intellectual capital management in the restaurant and hotel industry. Businesses that make investments in both increasing supply chain efficiency and building their expertise capabilities at the same time are likely to outperform those who only concentrate on one area.

## 5.2 Theoretical Implications

This study presents several important theoretical contributions to the current body of research on supply chain management, intellectual capital, and hotel management. Firstly, it highlights the significance of knowledge resources for the effective and efficient provision of services by applying the intellectual estate theory to operational performance within the hospitality sector. The findings provide empirical support for the resource-based view (Barney, 1991). By illustrating the impact of intangible knowledge resources on operational outcomes in a service-driven industry, (Teece et al., 1997) utilized the dynamic capabilities theory.

Secondly, the paper addresses a significant gap in the literature by integrating intellectual capital theory with perspectives from supply chain management. This research presents a broader understanding of how organizations can leverage their intellectual resources within effective organizational frameworks to enhance performance, emphasizing supply chain efficiency as a vital moderator in the relationship between intellectual capital and performance. Consequently, a more comprehensive theoretical framework for understanding operational excellence in the hotel industry is being developed through this integration.

Lastly, the study counters the dominance of developed countries in previous research by providing valuable insights from the perspective of a new economy (Bontis et al., 2015; Kianto et al., 2017). The findings underscore certain contextual factors within Pakistan's hospitality industry, such as the significance of human and relational capital, which may reflect the institutional and cultural characteristics of the business environment. These insights contribute to the development of conceptual frameworks that are more contextually sensitive, facilitating a better understanding of the dynamics of intellectual capital across different contexts.

## 5.3 Practical Implications

The results of the research have several applications for executives and managers in the hospitality sector in Pakistan and other countries that are developing. First, the significance of investing in staff hiring, instruction, and loyalty initiatives is shown by the significant beneficial impact that human capital has on operational performance. Building an informed, talented, and driven employee should be a top priority for hotels, as it serves as the cornerstone of operational performance. Specialized instruction, exchange of information websites, professional advancement possibilities, and dependent on performance reward schemes are a few examples of specific initiatives. Second, the significant influence of relational capital highlights the need for strategic approaches to relationship management with customers, suppliers, and other external stakeholders. Hospitality companies should actively engage in industry networks and groups, establish cooperative supplier partnerships, and put in place methodical customer relationship management systems. Establishing trust and building personal ties are crucial components of relational capital growth in Pakistan's relationship-based business environment.

Third, the benefits of structural capital imply that businesses in the hospitality industry ought to spend money creating effective procedures, frameworks, and understanding for management. Establishing a standard, the delivery of service processes, putting in place efficient systems for information, recording efficient procedures, and developing organizational structures that encourage creativity and knowledge exchange are all part of this. Investments in structural capital should be prioritized according to their possible influence on crucial operational procedures, given the resource limitations in many Pakistani hospitality organizations. Fourth, Hospitality organizations should implement an integrated view that considers how supply chain upgrades can boost the application of information materials. Particular actions might include the vendor's growth. activities, stock handling optimization, acquiring procedure advancements, and collaborative planning with supply chain partners.

Finally, the results indicate that to improve the performance of Pakistan's hospitality sector, planners should take into account both supply chain growth and intellectual structure. Policy

initiatives could include structural expenditures to support efficient transportation, encouragement for industry-academia cooperation, training and education opportunities for hotel employees, and legal structures that support open and effective supply chain procedures.

#### 5.4 Limitations and Future Research Directions

Notwithstanding its merits, this study has a number of shortcomings that open up new avenues for investigation. First, the capacity to demonstrate causal links between the variables is limited by the cross-sectional design. To investigate how supply chain efficiency and intellectual capital investments result in increases in operational performance over time, future research could use longitudinal designs. Second, although statistical testing indicated that this was not an important concern, the use of self-identified measurements from a single respondent in each business could cause common method bias. To produce stronger evidence, future studies should include data from several sources, such as objective achievement metrics and data from various organizational levels.

Third, the study concentrated on Pakistan's hospitality sector; its conclusions might not apply to other sectors or nations with distinct contextual features. In order to find contextual elements that affect the association between intellectual capital and performance, future research could expand this study to various service industries and conduct cross-national comparisons. Fourth, This study looked at supply chain efficiency as an overall component and its moderating effect. Future studies should examine the distinct impacts of particular supply chain elements (such as logistics, inventory control, and acquisition) on the connection among various operational performance indicators and intellectual capital components. The possible mediating processes through which intellectual capital affects operational performance were not investigated in the study. To gain a more thorough grasp of the connection between intellectual capital and performance, future research could look into mediators, including innovation capability, organizational learning, and organizational agility.

#### 5.5 Conclusion

The present research examined the relationship between intellectual capital components and operational performance in Pakistan's hospitality sector. The results show that relational, structural, and human capital all have a favorable impact on operational performance, with human capital having the biggest impact. Furthermore, these correlations are considerably moderated by supply chain efficiency, which amplifies the beneficial effects of intellectual capital elements on operational performance. These findings demonstrate the value of a combined strategy for supply chain rationalization and intellectual capital management in the hotel sector. Optimal operational performance is likely to be attained by organizations that concurrently enhance their supply chain efficiency and build their understanding capabilities. The results advance the conceptual comprehension of how operational systems and immaterial information assets connect to generate value in service-oriented companies, especially in emerging economies.

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