THE IMPACT OF INTELLECTUAL CAPITAL ON THE FINANCIAL PERFORMANCE IN INSURANCE FIRMS LISTED IN AMMAN STOCK EXCHANGE: USING THE (VAIC) MODEL

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ARTICLE INFO	ABSTRACT
	Purpose: The aim of this study is to examine the impact of intellectual capital (human capital, structural capital, and employed capital) on the financial performance of listed insurance companies in the Amman Stock Exchange **Theoretical framework**: Intellectual capital has become increasingly important in generating value for companies, and many researchers have linked it to corporate financial performance and strategic competitive advantage. **Design/methodology/approach**: The study population consist of 21 insurance companies listed on the Amman Stock Exchange in Jordan during the period of 2011-2020. Intellectual capital was measured using the value added intellectual coefficient model (Pulic, 2000), and its impact on financial performance was analyzed using published financial statements of the insurance companies. **Findings:** The results of the study found a statistically significant positive effect of human and employed capital on financial performance as measured by the rate of return on assets and return on equity. Furthermore, the study revealed a significant positive effect of intellectual capital, specifically human capital, on financial performance measured by market value (Tobin's Q). **Research, Practical & Social implications:** The study suggests that insurance companies should treat intellectual capital as a strategic resource and monitor and invest in it periodically for continuous development. The study suggests building a positive organizational culture that supports intellectual capital is recommended **Originality/value:** This study contributes to the understanding of the relationship between intellectual capital and financial performance for the first time in the insurance industry in Amman Stock Exchange. The findings highlight the importance of managing and investing in intellectual capital as a strategic resource to enhance financial performance. Doi: https://doi.org/10.26668/businessreview/2023.v8i5.1928

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O IMPACTO DO CAPITAL INTELECTUAL NO DESEMPENHO FINANCEIRO DAS EMPRESAS DE SEGUROS LISTADAS NA BOLSA DE VALORES DE AMÃ: USANDO O MODELO (VAIC)

RESUMO

Objetivo: O objetivo deste estudo é examinar o impacto do capital intelectual (capital humano, capital estrutural e capital empregado) sobre o desempenho financeiro das seguradoras listadas na Bolsa de Valores de Amã

Estrutura teórica: O capital intelectual tem se tornado cada vez mais importante na geração de valor para as empresas, e muitos pesquisadores o associam ao desempenho financeiro corporativo e à vantagem competitiva estratégica.

Projeto/metodologia/abordagem: A população do estudo consiste em 21 companhias de seguros listadas na Bolsa de Valores de Amã, na Jordânia, durante o período de 2011 a 2020. O capital intelectual foi medido com o uso do modelo de coeficiente intelectual de valor agregado (Pulic, 2000), e seu impacto sobre o desempenho financeiro foi analisado com o uso de demonstrações financeiras publicadas das seguradoras.

Conclusões: Os resultados do estudo revelaram um efeito positivo estatisticamente significativo do capital humano e do capital empregado sobre o desempenho financeiro, medido pela taxa de retorno sobre os ativos e pelo retorno sobre o patrimônio líquido. Além disso, o estudo revelou um efeito positivo significativo do capital intelectual, especificamente do capital humano, sobre o desempenho financeiro medido pelo valor de mercado (Q de Tobin).

Implicações sociais, práticas e de pesquisa: O estudo sugere que as seguradoras devem tratar o capital intelectual como um recurso estratégico e monitorá-lo e investir nele periodicamente para o desenvolvimento contínuo. O estudo sugere que é recomendável criar uma cultura organizacional positiva que apoie o capital intelectual

Originalidade/valor: Este estudo contribui para a compreensão da relação entre o capital intelectual e o desempenho financeiro pela primeira vez no setor de seguros da Bolsa de Valores de Amã. Os resultados destacam a importância de gerenciar e investir no capital intelectual como um recurso estratégico para melhorar o desempenho financeiro.

Palavras-chave: Eficiência do Capital Intelectual, Desempenho Financeiro, Modelo VAIC, Setor de Seguros.

EL IMPACTO DEL CAPITAL INTELECTUAL EN LOS RESULTADOS FINANCIEROS DE LAS COMPAÑÍAS DE SEGUROS QUE COTIZAN EN LA BOLSA DE AMMÁN: UTILIZACIÓN DEL MODELO (VAIC)

RESUMEN

Objetivo: El objetivo de este estudio es examinar el impacto del capital intelectual (capital humano, capital estructural y capital de los empleados) en los resultados financieros de las compañías de seguros que cotizan en la Bolsa de Ammán.

Marco teórico: El capital intelectual ha adquirido una importancia creciente en la generación de valor para las empresas, y muchos investigadores lo asocian a los resultados financieros de las empresas y a la ventaja competitiva estratégica.

Diseño/metodología/enfoque: La población del estudio está formada por 21 compañías de seguros cotizadas en la Bolsa de Ammán (Jordania) durante el periodo comprendido entre 2011 y 2020. El capital intelectual se midió utilizando el modelo de coeficiente intelectual de valor añadido (Pulic, 2000), y su impacto en el rendimiento financiero se analizó utilizando los estados financieros publicados de las compañías de seguros.

Conclusiones: Los resultados del estudio revelaron un efecto positivo estadísticamente significativo del capital humano y del capital empleado sobre el rendimiento financiero, medido por la tasa de rendimiento de los activos y el rendimiento de los fondos propios. Además, el estudio reveló un efecto positivo significativo del capital intelectual, concretamente del capital humano, sobre el rendimiento financiero medido por el valor de mercado (Q de Tobin).

Implicaciones sociales, prácticas y de investigación: El estudio sugiere que las aseguradoras deberían tratar el capital intelectual como un recurso estratégico y supervisarlo e invertir en él periódicamente para su desarrollo continuo. El estudio sugiere que es aconsejable crear una cultura organizativa positiva que apoye el capital intelectual.

Originalidad/valor: Este estudio contribuye a la comprensión de la relación entre el capital intelectual y los resultados financieros por primera vez en el sector asegurador de la Bolsa de Ammán. Los resultados ponen de relieve la importancia de gestionar e invertir en capital intelectual como recurso estratégico para mejorar el rendimiento financiero.

Palabras clave: Eficiencia del Capital Intelectual, Rendimiento Financiero, Modelo Vaic, Sector Asegurador.

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INTRODUCTION

Intellectual Capital (IC) has emerged as a crucial factor in generating wealth for companies in the contemporary global economic landscape. Numerous researchers have linked IC to corporate performance and strategic competitive advantage (Hsieh et al., 2019). However, it is worth noting that certain developing or emerging economies have yet to recognize the significance of their IC (Smriti & Das, 2018). With intangible assets surpassing tangible assets in value, interest in IC has grown substantially. IC refers to the collection of intangible assets related to the knowledge and wisdom utilized by companies to create value (Salvi et al., 2020). In fact, IC has become as important as financial capital in generating profits (Campos et al., 2020). Nevertheless, a clear consensus regarding the relationship between IC and corporate value remains elusive (Ni et al., 2020).

In emerging economies such as Jordan, many companies face challenges in developing IC that aligns with their competitive strategies and enhances their performance. Therefore, this study aims to shed light on the concept of IC and its impact on the financial performance (FP) of Jordanian insurance companies listed on the Amman Stock Exchange (ASE). The study proposes that insurance companies should evaluate and prioritize their IC as a critical element in achieving their objectives efficiently and attaining better FP. Additionally, the study aims to identify the impact of three scopes of IC, namely human capital (HC), structural capital (SC), and employed capital (CE), on FP, measured by return on assets (ROA), return on equity (ROE), and market value (Tobin's Q).

The research problem identified by the researchers revolves around the measurement of intellectual capital, which poses a challenge for all companies in Jordan, particularly in the insurance sector. This challenge stems from the lack of agreement on the components and measurement methods of intellectual capital. Given the intensification of competition, increased customer awareness, and evolving customer preferences, companies are increasingly concerned about the impact of intellectual capital on market share growth and performance improvement. These factors highlight the need for the development of intellectual capital, specifically human, structural, and employed capital, to influence company performance in the face of economic conditions and intense competition at the local, regional, and international levels. Consequently, the main question addressed in this study is:

> "What is the impact of intellectual capital, encompassing its three dimensions (human, structural, and employed), on the financial performance of listed insurance companies in the Amman Stock Exchange?"

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From this main question, three sub-questions are derived:

A.   What is the impact of intellectual capital, encompassing its three dimensions (human, structural, and employed), on the financial performance measured by return on assets (ROA) of listed insurance companies in the Amman Stock Exchange?

B.   What is the impact of intellectual capital, encompassing its three dimensions (human, structural, and employed), on the financial performance measured by return on equity (ROE) of listed insurance companies in the Amman Stock Exchange?

C.   What is the impact of intellectual capital, encompassing its three dimensions (human, structural, and employed), on the financial performance measured by market value (Tobin's Q) of listed insurance companies in the Amman Stock Exchange?

The primary goal of this study is to examine the influence of intellectual capital, including its three dimensions (human, structural, and employed), on the financial performance measured by ROA, ROE, and market value (Tobin's Q) of listed insurance companies in the Amman Stock Exchange from 2011 to 2020.

This study holds scientific importance as it establishes a link between intellectual capital and the financial performance of insurance companies. The researchers aim to emphasize the significance of intellectual capital and its impact on the financial performance of insurance companies, particularly in emerging economies like Jordan. This study represents the first investigation of its kind in the Jordanian insurance sector, filling a gap in the existing literature.

The practical importance of this study lies in its contribution to the development of intellectual capital as a tool that affects the financial performance of insurance companies. By recognizing the importance of intellectual capital, companies can increase their market share, enhance their competitive position, and improve profitability. The findings of this study will assist company executives and managers in understanding the relationship between intellectual capital components and effective management strategies to strengthen their competitive position.

Furthermore, this study holds significance within the field of insurance companies, as it provides insights into the patterns and strengthening of intellectual capital in this sector. It also identifies the strengths and weaknesses of intellectual capital within insurance companies and offers recommendations for improvement.

The structure of this paper is organized into five sections. The first section presents the introduction, providing an overview of the research topic, previous relevant studies, and the need for further investigation. The second section encompasses the literature review, which

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offers a comprehensive analysis of existing research related to intellectual capital and its impact on financial performance. The third section details the research methodology employed, outlining the data collection and analysis techniques. Finally, the fourth section presents the study's outcomes, including conclusions, recommendations, and suggestions for future research.

LITERATURE REVIEW

Intellectual Capital

IC is a relatively new field in science, with its theoretical framework and practical applications having expanded over the past few decades (Ferreira et al., 2020; Serenko & Bonits, 2013). While Stayer is credited with coining the term "intellectual capital" in 1990, numerous researchers have since made contributions to the field. For example, Guthrie et al. (2017), and Montemari and Chiucchi, (2017), have all contributed to defining the concept of IC, applying it in practice, recognizing the need for changing management considerations, and extending the IC concept to social, ethical, and environmental issues.

There are several definitions of IC. Edvinsson and Malone (1997) describe IC as a stock of expertise and skills acquired by employees, as well as relationships with customers, which gives an organization a competitive edge. Similarly, Stewart (1997) describes IC as a set of knowledge, information, and intellectual property that generate wealth for the company. Kasoga (2020) defines IC as the control of intellectual assets, applied experience, organizational innovation, customer relationships, and the proficiencies and competencies of a professional nature, which engender value for the organization. IC is generally regarded as a critical driver for improving company competitiveness and value creation in a knowledge economy (Xu & Liu, 2020). Sanchez Limon et al. (2021) considered that IC in an organization enable them by the knowledge to create value.

Considering the matter from an accounting vantage point, IC can be defined as the variance between a company's market value and the registered book value, which concludes the economic value of IC (Forte et al., 2017). According to Pulic (2000), IC refers to the intellectual capacity that provides efficient use and employment of The tangible assets and intellectual capabilities, enabling organizations to maintain a competitive edge and value creation.

In general, IC has been an important area of study that has attracted increasing attention in recent decades due to its potential for enhancing organizational performance and competitiveness in a knowledge economy.

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Measuring IC remains a challenge for accountants, as the topic has been subject to extensive scholarly and practical discussions aimed at determining appropriate measures (Giuliani et al., 2016). Recent research has focused on various features of IC, such as its definition and measurement, with studies conducted by Couto et al. (2021), Baima et al. (2020), Bellucci et al. (2021), Lin and Edvinsson (2020), Salvi et al. (2020), and Svarc et al. (2020) and Serenko, A. and Bonits. (2013) offering comprehensive reviews of the field Ferreira et al. (2020).

The Skandia model, developed by Edvinsson (1992), is among the most prominent measurement models for IC, which defines IC as the difference between the market and book value of a company's assets. Alternatively, the economic value model, which utilizes the economic profit approach to quantify the value generated by an organization during a specific period, and the calculated intangible value model, which assumes that any increase in the average return on investment in physical capital represents IC, are other models developed in the same year. The intangible assets controller model, developed by Sveiby (1997), relies on a set of indicators to measure intangible assets. More recent models developed through a series of studies by Pulic (2000, 2003, 2004, and 2008) had resulted in the VAIC model which measures IC by evaluating the efficiency of its three components: structural, human, and employed capital.

IC and FP

The measurement of FP represents an indication of an organization's success in achieving its goals, using both quantitative and qualitative indicators (Absah et al., 2018). It encompasses the company's efforts to improve its value through the effective use of assets and the achievement of revenue (Mulyono et al., 2019). FP is also characterized by the ability to work efficiently and profitably, interact with environmental opportunities and threats, and achieve long-term profitability (Riak & Bill, 2022).

Different studies have defined FP from various perspectives, including increasing productivity, sales, and competitiveness, reducing costs, and improving efficiency and effectiveness (Ibukunle and James, 2012; Olorunsegun, 2010; Ngumo et al., 2017). FP can also be measured through ratio analysis, which assesses a company's ability to produce profits (Widnyana et al., 2020; Mudzakar & Wardanny, 2021). Additionally, FP is considered an overall measure of an organization's strategic objectives (Soewarno et al., 2018).

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IC is an important concept in business management, as it is believed increase the performance of companies. Previous studies have shown a direct positive correlation between IC and the FP in developed countries. For example, a study by Nazir et al. (2020) in China, Xu and Lin (2020) in Korea, and Hudgins (2022) in the US suggests the IC can enhance companies' FP in those countries. Additionally, Singla (2020) have demonstrated the importance and impact of IC on the FP of businesses through research on creating competitive advantage, maximizing economic value, optimal utilization of organizational capitals and abilities, corporate governance practices, and Intellectual property management.

Nadeem et al. (2018) have underscored the significance of IC in enhancing the FP of corporations. Smriti and Das (2018) have explored the influence of IC on the FP of Indian companies listed during 2001-2016, and their findings demonstrate that IC has a substantial impact on corporate performance by enhancing the company's productivity. Kasoga (2020) has provided a fresh outlook in the realm of IC and its association with the FP of firms in Tanzania. The study results have shown a significant positive effect between IC and FP measured by SG, ROA, ATO, and Tobin's Q.

Bayraktaroglu et al. (2019) and Xu and Lin (2020) have employed an Extended VAIC model to examine the association between IC and performance, and their results indicate that IC can positively affect FP. Xu and Lin (2020) have further concluded that physical capital is the most influential on company performance, while human capital is viewed as a measure of improving FP.

IC is composed of three essential components: HC, SC, and CE (Xu & Liu, 2020). HC pertains to the knowledge, skills, education, expertise, and other personal characteristics of employees. It also impacts structural capital. Structural capital includes company strategies, data structure, operations management, organizational strategic planning, and organizations visions that support employee performance and business performance. It introduces two types of capital: organizational capital and technological capital. Employed capital refers to the essential financial resources and tangible capital and is an important component of the VAIC model.

The VAIC model is vastly used for measuring IC's efficiency, which utilizes the efficiency ratios from the predetermined components of IC, namely HC, SC, and CE, to determine the value of VAIC. The model has gained popularity due to its ability to quantify the degree of IC's involvement in value creation for companies and the effect of IC on FP.

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The primary hypothesis of the study posits that there is no statistically significant relationship between IC's three dimensions mentioned above and the FP of insurance companies listed on the ASE. From this primary hypothesis, the following sub-hypotheses are derived

MATERIAL AND METHODOLOGY

The study utilized the intellectual coefficient of added value model (Pulic, 2000) to observe the effect of IC on the FP of 21 listed Jordanian insurance companies during the period of 2011-2020. The study employed three measurement models, utilizing ROA, ROE and Tobin's Q market value index as an indicator to evaluate FP and it was adopted in combined market (Almshabbak and Chouaibi, 2023).

(Tobin's Q) scale to measure the company's performance was adopted combined market evaluation with financial performance.

To ensure a robust measurement for the relationship between the variables, the study employed the fixed and random model of the time series instead of the multiple linear regression model. This approach accounts for the time factor and controls for various factors that may affect the association between the variables.

The validity of the fixed and random tests measurement was measured using the Hausman test for the three hypotheses. The study did not utilize the pooled regression model since it does not account for the time factor in the outcomes.

The Breusch and Pagan Lagrangian multiplier test (BPLM) for random effects was used to conclude whether the aggregate regression test should be excluded. The normal distribution of residuals in the random model test was also examined.

The study aimed to determine whether IC components have a significant effect on FP. Accordingly, table (1) in the appendix depicts all the study's included in the aforementioned statistical models.

Table (1) descriptive analysis

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Group	-	-	1	21	-	-
Year	-	-	2011	2020	-	-
HC	1.411	.984	-3.417	4.067	-1.7878	8.289707
SC	.048	2.514	-26.766	4.114	-7.7948	73.914
CE	.233	.266	-.875	2.107	1.666666	18.1789
ROA	.009	.034	-.252	.072	-3.2972	20.48701

ROE	.024	.104	-.492	.418	-1.42841	8.7749
TOBQ	.37	.231	0	2.584	4.4925	41.8164
SIZE	17.175	.676	14.52	18.584	0.05706	3.25166
LEV	.606	.238	.1814	.948	-.590311	3.5382
IC	1.692	2.9	-26.725	5.024	-6.35208	54.3515
The total number of observation is 210, , HC= Human capital, SC=Structural capital, EC= Employed Capital, ROA= Return on assets, ROE= Return on equity, TOBQ=Tobin's' Q , SIZE=Frim size, LEV=Leverage, IC=Intellectual capital						

Source: Statistical analysis results generated by Stata

Table (1) provides descriptive statistics for the study variables. Consequently, the results show that the mean of HC is 1.411, with "σ" of .984, suggesting that on average, insurance industry listed on the ASE efficiently use their human capital. However, the skewness of -1.7878 indicates that the distribution of HC is negatively skewed, which may suggest that a few companies have low HC.

The structural capital efficiency has a mean of .048, with "σ" of 2.514. The skewness of -7.7948 and kurtosis of 73.914 indicate that the distribution of SC is highly skewed and leptokurtic, respectively, suggesting that only a few companies have high SC.

The mean of the employed capital efficiency is .233, with "σ" of .266, indicating that the Jordanian insurance industry invest moderately in CE. The skewness of 1.666666 and kurtosis of 18.1789 indicate that the distribution of CE is positively skewed and moderately leptokurtic.

The FP measures, ROA, ROE, and Tobin's Q, have means of .009, .024, and .37, respectively. The low means suggest that the FP of the Jordanian insurance industry is relatively low. The skewness of -3.2972, -1.42841, and 4.4925, respectively, indicate that the distributions of ROA, ROE, and Tobin's Q are skewed in the negative side, suggesting that a few companies have low FP.

The size of the Jordanian insurance industry has a mean of 17.175, with "σ" of .676. The skewness of .05706 suggests that the distribution of size is nearly symmetric. The mean of the leverage (LEV) is .606, with "σ" of .238, indicating that Jordanian insurance companies have moderate leverage levels. Finally, the IC efficiency has a mean of 1.692, with a "σ" of 2.9, signifying that the efficiency of IC utilization in insurance companies listed on ASE is moderate.

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Table (2): Pearson Correlation Matrix

Variables	ROA	ROE	TQ	SC	CE	HCd	IC	SIZE	LEV
ROA	-								
ROE	0.908*	-							
TQ	0.044	-0.004	-						
SC	0.104	0.115*	0.028	-					
CE	0.656*	0.713*	-0.069	0.049	-				
HCd	0.372*	0.408*	-0.035	0.139*	0.290*	-			
IC	0.447*	0.435*	0.032	0.919*	0.323*	0.239*	-		
SIZE	0.289*	0.245*	0.073	0.139*	0.075	-0.089	0.242*	-	
LEV	-0.222*	-0.136*	-0.227*	-0.058	0.247*	0.023	-0.108	-0.306*	-
*** p<0.01, ** p<0.05, * p<0.1									

Source: Statistical analysis results generated by Stata

Table (2) displays the outcomes of the Pearson correlation coefficient, which measures the degree of correlation between two variables. The outcomes of Table (2) illustrate that there are weak to medium correlations between the independent and control factors of the study. This finding enhances the ability of the model to explain the relationships without a defect resulting from the correlation between two variables. A correlation of less than 29% is considered weak, while a correlation between 30% and 49% is considered medium.

It is noteworthy to mention that two exceptions to the results shown in Table (2). Firstly, the results indicated a positive and significant linear correlation between the ROE and the ROA. This result is not surprising given the natural relationship between these two factors, and the existence of this correlation does not require any statistical action due to the use of these two variables within separate measurement models.

Secondly, there is significant positive relationship between HC and the ROE, with a statistical effect of 10% and a correlation of 90.5% between the two variables. This finding requires a corrective action in the statistical measurement to avoid the consequences of this correlation, where one of the factors can be eliminated in the statistical model, or the process of converting the statistical measurement into the first difference of the factor with the high correlation can be adopted. In this study, the researcher opted for the second option, which is adopting the first difference for the human capital coefficient and re-measurement to ensure that the correlation between this variable and the ROE is neutralized. Therefore, Table (2) presents the final result after addressing this correlation without harming the adopted

measurement model. This procedure is a proposed and effective solution by studies concerned with econometrics and a way to avoid the presence of linear correlations between the independent variables in the model that may lead to weak conclusions.

Finally, the study conducted a multiple linear interaction test for the independent and control study factors to assess the possibility of the influence of these variables on each other. An examination of the variance inflation factor was performed to detect the existence of multiple linear variance among the study factors. The results show that there is no linear overlap for the variables of this study based on the analysis of the variance inflation factor, which averaged at the level of 1.538, with the lowest value of 1.032 and the highest value of 2.471. This finding excludes the possibility of a linear overlap between the study factors. The accepted value of the coefficient of inflation of variance varies in different studies, with some suggesting that it is permissible to accept linear overlap at a level less than 10, while others suggest that this percentage should not exceed 2.5.

Table (3) Unit root test

Variable	Fisher-Type
ROA	0.0000
ROE	0.0000
Tobin's Q	0.0000
SC	0.0000
CE	0.0000
HEd	0.0000
LEV	0.0000
SIZE	0.0000

Source: Statistical analysis results generated by Stata

The unit root test is a crucial tool for assessing time series models, as it provides a measure of the stability of variables over time by estimating the temporal lag coefficient for a single variable. A multitude of tests have been developed for this purpose, many of which involve examining the relationship between the previous time period's result and the current result over time to detect the presence of a unit root. One of the most widely used tests is the Fisher-type unit-root test, which tests the null hypothesis that a single coefficient has a unit root, indicating instability in the variable being measured. Since the instability of unit roots over time weakens the statistical test function in time series models, it is essential to determine

the stability of the variables of interest. As demonstrated in Table (3), all variables in the study exhibit stability, indicating that they can be used to conduct time series tests with reasonable efficiency.

Table (4) Results and Discussion

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
SC	0	0	0.71	.477	-.001	.001	
CE	.07	.006	12.60	0	.059	.081	***
HCd	.006	.001	4.37	0	.003	.008	***
SIZE	.01	.005	2.12	.035	.001	.02	**
LEV	-.171	.019	-9.00	0	-.208	-.133	***
Constant	-.074	.081	-0.91	.362	-.235	.086	

Mean dependent var	0.012		SD dependent var		0.027		
R-squared	0.653		Number of obs		189		
F-test	61.224		Prob > F		0.000		
Akaike crit. (AIC)	-1084.451		Bayesian crit. (BIC)		-1065.001		

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
SC	.001	.002	0.49	.627	-.002	.004	
CE	.248	.02	12.24	0	.208	.288	***
HCd	.023	.005	4.93	0	.014	.032	***
SIZE	.045	.018	2.59	.01	.011	.08	**
LEV	-.506	.069	-7.33	0	-.643	-.37	***
Constant	-.498	.297	-1.68	.095	-1.084	.088	*

Mean dependent var	0.030		SD dependent var		0.093		
R-squared	0.639		Number of obs		189		
F-test	57.829		Prob > F		0.000		
Akaike crit. (AIC)	-595.838		Bayesian crit. (BIC)		-576.387		

TOBQ	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
SC	.002	.004	0.42	.677	-.006	.009	
CE	.079	.051	1.55	.122	-.021	.18	
HCd	.021	.012	1.80	.074	-.044	.002	*
SIZE	.556	.044	12.65	0	-.643	-.47	***
LEV	-.107	.174	-0.62	.539	-.45	.236	
Constant	9.979	.746	13.38	0	8.507	11.452	***

Mean dependent var	0.357		SD dependent var		0.228		
R-squared	0.508		Number of obs		189		
F-test	33.675		Prob > F		0.000		
Akaike crit. (AIC)	-247.509		Bayesian crit. (BIC)		-228.058		

*** p<.01, ** p<.05, * p<.1

Source: Statistical analysis results generated by Stata

Table (4) presents the outcomes of the statistical models of the fixed panel effect for the study variables for the null hypotheses, which suggests an absence of any significant effect for IC in its three dimensions (HC, SC and CE) on FP.

The first model measure FP via ROA, the analysis shows a significant positive effect of CE and HCd on ROA at the level of 1% and a significant negative effect of LEV on ROA. Additionally, the companies size shows a positive effect on ROA at a significance level of 5%.

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Likewise, the second model which measures the FP via ROE shows a significant positive effect of CE and HCd at the level of 1%, while the variable LEV also indicated a significant negative effect on ROE. Companies size also show a positive effect on ROE at a significance level of 5%. Finally, the third model which measures the FP via (TOBQ) shows a significant negative effect of HCd on TOBQ at a significance level of 10%, while companies size had a significant positive effect on TOBQ. The other variables (SC, CE, and LEV) did not have statistically significant effects on TOBQ.

All in all, the models have a high R-squared value (0.653, 0.639, and 0.508 for ROA, ROE, and TOBQ respectively) indicating that the independent variables explain a significant level of the deviation found in the dependent variable. In addition, the F-tests indicate that the models are significant, with probabilities of 0.000. The Akaike and Bayesian criteria values suggest that the models have good fit. Moreover, the results indicate that the study's hypothesis is partially supported, as human capital efficiency (HC) was found to have a significant positive impact on FP for the all indicators. Additionally, the study found that functional capital (CE) also have a significant positive impact on FP for the ROA and ROE indicators. Finally, structural capital (SC) have not provide sufficient statistical evidence to support its impact on FP for the three adopted financial indicators.

Our results suggest that investment in IC, particularly human capital, can lead to improved FP for Jordanian insurance companies. To put our results in context, human capital and functional capital show strong effect on the ROA, underscoring the importance of these elements as an important driver of FP. This finding reinforces previous research conducted by Bataineh et al. (2022) and Ramirez et al. (2020), but differs from those by Soewarno and Tjahjadi (2020). Moreover, the positive effect of human capital on ROE suggests that investments in human capital should be observed as a long-term investment, and companies should manage their human resources effectively to enhance FP. This finding is in line with a previous study (Xu and Liu, 2020) but differs from Kasoga's (2020) study. The study also found a positive effect of employed capital on ROE, indicating that proper management of financial and physical assets can improve profitability. This result agrees with studies conducted in developing countries by Chowdhury et al. (2018) and Bataineh et al. (2022) but differs from Kasoga's (2020) study. Finally, the study's results demonstrate a positive relation between human capital and market value, suggesting that investing in human resources and improving employees' knowledge and skills can enhance innovation in services provided by insurance companies. This finding also substantiates past studies by Smriti and Das in (2018) but differs

from the study by Kasoga (2020). These results underscore the importance of human resources for insurance companies, indicating that companies should view employee spending as an investment to improve their market value and overall FP.

CONCLUSION, LIMITATIONS, RECOMMENDATIONS AND FUTURE RESEARCH

In conclusion, this study aimed to investigate the impact of Intellectual Capital (IC), specifically the dimensions of HC, SC, and CE, on the Financial Performance of listed insurance companies in the ASE. The research objective was to examine the relationship between IC and FP, as measured by Return on Assets (ROA), Return on Equity (ROE), and market value (Tobin's Q).

The findings of this study revealed that IC, particularly HC and CE, exerted significant influences on FP, as evidenced by the positive effects observed on ROA and ROE. However, the statistical evidence did not provide sufficient support for a significant impact of SC on FP. These results indicate that insurance companies should prioritize investments in human resources and effectively manage their financial and physical assets to enhance their FP.

By addressing the research question, this study contributes to the existing literature by shedding light on the relationship between IC and FP in the Jordanian insurance sector, a relatively understudied area. The results affirm the critical role of IC in driving the financial performance of insurance companies operating in emerging economies, such as Jordan.

However, it is essential to acknowledge the limitations of this research. The study's focus on the insurance sector in Jordan may restrict the generalizability of the findings to other industries and countries. Furthermore, the reliance on secondary data from published annual reports may have inherent limitations in capturing the intricate nuances of IC and its effect on FP.

To summarize, this study provides valuable insights into the relationship between IC dimensions (HC, SC, and CE) and the FP of insurance companies listed in the ASE. The findings underscore the significance of human capital and employed capital in driving financial performance. This study contributes to the understanding of IC in the insurance sector and offers practical implications for enhancing FP. Future research endeavors should explore IC and FP in diverse industries and consider the incorporation of additional variables to further deepen our understanding of this multifaceted relationship.

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