

Intellectual Capital and Performance in Croatian Academic Libraries: An Empirical Analysis

Ljiljana Poljak Bilić

Department of Information Sciences and Technologies, University of Zadar, Croatia

lpoljak@unizd.hr

Abstract: The importance of intellectual capital in the knowledge economy has become crucial, as the competitiveness and successful performance of contemporary organisations depend on such resources. Numerous empirical studies support this, most of which originate from the for-profit sector. However, the importance of intellectual capital in the public and non-profit sectors is also widely acknowledged and, according to some authors, may be even greater than in the for-profit sector. This research contributes to the existing literature on intellectual capital in the public and non-profit sectors by examining intellectual capital in academic libraries. Although there are assumptions in the literature on the importance of intellectual capital to library performance, there remains a lack of empirical research confirming this claim. This study investigates intellectual capital in academic libraries in Croatia and its relationship with performance. Intellectual capital is categorized into three main components: human, structural, and relational capital. A questionnaire on intellectual capital was distributed to academic libraries in Croatia. To test the relationship between intellectual capital and performance, the survey results were combined with secondary data on library performance, assessed using performance indicators defined by the ISO 11620 standard. This standard follows the balanced scorecard approach and organizes the performance indicators into four measurement perspectives: resources, access and infrastructure (1), use (2), efficiency (3), and potentials and development (4). The compiled data were analysed using descriptive statistics and Pearson's correlation coefficient. Path analysis was then used to examine the strength of the relationships between intellectual capital components and library performance. The results indicate that structural capital is a determinant of library performance, reflected in a significant positive relationship with the Potentials and Development performance indicators, while human and relational capital revealed no significant effect on performance. This research contributes to a deeper understanding of intellectual capital in libraries through both theoretical and methodological contributions, providing empirical evidence of its relationship with performance.

Keywords: Intellectual capital, Academic library, ISO 11620, Library performance indicators, Academic library performance

1. Introduction or Background

At the end of the 20th century, numerous social changes emerged due to advancements in information and communication technology, globalization, and the powerful influence of the internet. It became evident that the development and progress of the economy were based on knowledge. In the era of the knowledge economy, knowledge becomes the foundation of modern society and the primary economic resource, while traditional material resources are considered secondary (Drucker, 1993). In line with this, there has also been a shift in organisational management philosophy. Resource-based theory is founded on the assumption that an organisation's success depends not only on its ability to adapt to the external environment, but also on effectively managing its internal resources.

Libraries play an important role in the knowledge economy, emerging from their fundamental mission of preserving and providing access to information and knowledge. Libraries can thus be considered a resource for society in the era of knowledge economy, but at the same time they are organizations whose operations should reflect the principles of the knowledge society and knowledge economy. In libraries, a significant prerequisite for development is the ability to recognize and analyse the role of intangible resources, including organizational knowledge, innovativeness, leadership, organizational culture, communication, organizational reputation, and others (Wojciechowska, 2016a), which can be interpreted as intellectual capital. The concept of intellectual capital in (academic) libraries is present in the literature, but has been discussed mainly at a conceptual level (Iivonen and Huotari, 2007; White, 2007b; Town, 2014), with a lack of empirical evidence supporting those assumptions.

1.1 Problem Statement

The concept of intellectual capital in academic libraries is present in the literature but has mainly been discussed at a conceptual level (Iivonen and Huotari, 2007; White, 2007b; Town, 2014), with a lack of empirical evidence supporting these assumptions. The focus has mostly been on human capital, as it is considered the most important component of intellectual capital for library performance (Cribb, 2005; White, 2007a; Asonitis and Kostagiolas, 2010; Wojciechowska, 2016b). However, in the public and not-for-profit literature, the structural and relational components appear to be more important than previously considered (Carmeli and

Tishler, 2004; Farah and Abouzeid, 2017; Buonomo et al., 2020; Barbieri et al., 2021; Laallam et al., 2022). Therefore, this research investigates the extent to which intellectual capital components are related to library performance.

Therefore, this research aims to answer the question of *what are the effects of human, structural, and relational capital on the performance of Croatian academic libraries?*

2. Research Model

Intellectual capital is most commonly defined as a non-monetary asset without physical substance, which is valuable or can generate future benefits (Keong Choong, 2008), and, to some extent, can be retained and traded by the organisation (Organisation for Economic Cooperation and Development, 2008). Intellectual capital is usually categorised into three main components:

- Human capital – an individual's knowledge, skills, know-how, and experience (Bontis and Fitz-enz, 2002; Meritum Project, 2002), which are used by the organisation but owned by individuals (Bontis, 1998; Melo and De la Gala Velásquez, 2022).
- Structural capital – refers to resources or codified knowledge embedded in organisational routines, structures, systems, culture, values, and processes (Bontis and Fitz-enz, 2002; Barbieri *et al.*, 2021), which are acquired from human capital (Bahtijarević-Šiber, 2014; Melo and De la Gala Velásquez, 2022) and used to support it (Edvinsson and Malone, 1997; Sveiby, 2001).
- Relational capital – refers to the relationships an organization develops with its external environment, reflected in the organisation's image, user loyalty, and the satisfaction of various external stakeholders (Tadić, 2021).

Intellectual capital, which is based on knowledge, is considered an important aspect of librarianship due to the emphasis on the value of information and knowledge in today's environment (Koenig, 1997). Given the potential value it offers to libraries, the literature highlights the importance of measuring and reporting on this phenomenon (Koenig, 1996, 1997; White, 2007b; Kostagiolas and Asonitis, 2009; Corral and Sriborisutsakul, 2010; Corral, 2014). Libraries fulfil their mission through a combination of tangible resources (such as space or collections) and intangible resources (such as librarians who use their knowledge to develop and provide services), making it evident that intellectual capital, as a set of intangible resources, can influence library performance and user satisfaction (Kostagiolas and Asonitis, 2009). Beyond enhancing the performance and efficiency of libraries, intellectual capital also contributes to increasing the attractiveness of services (Wojciechowska, 2016a). The main goal of intellectual capital management in libraries, according to Kostagiolas (2013), is the appropriate use of knowledge assets to acquire additional value in the library's operations and services and to increase its overall value for the community. To achieve this, libraries must have a clear strategic orientation, more effective measurement and acquisition of resources, and ultimately create, manage, and deliver more value and services to users and other stakeholders (White, 2007b).

2.1 Intellectual Capital Measurement and Library Performance

In order to manage intellectual capital, it is necessary to identify it and develop systems for its monitoring, measurement, and reporting. Traditional measurement systems focus on tangible assets and financial indicators, while the position of knowledge and intellectual capital in relation to value in such systems is often neglected. In order to adapt the business performance measurement system to the needs of monitoring the contribution of intellectual capital, Kaplan and Norton (1996) developed a balanced scorecard model (BSC). In this model, traditional financial indicators are supplemented with criteria for measuring performance from three additional perspectives: users, internal business processes, and learning and growth. The balanced scorecard model is used not only to measure intellectual capital, but is also significantly used in the management and assessment of library performance. Library performance is defined as the effectiveness of the provision of services by the library and the efficiency of the allocation and use of resources in providing services (International Standard Organisation, 2024). Effectiveness stands for the measure of the degree to which given objectives are achieved (International Standard Organisation, 2024). Therefore, both library performance and its effectiveness are determined by the library's objectives.

To measure performance, libraries collect statistical and other data describing their activities and analyse these data to evaluate their effectiveness (Poll and Boekhorst, 2008). In this process, it is important not to overlook intellectual capital (Hiller, Kyrrilidou and Self, 2008; Corral and Sriborisutsakul, 2010), particularly knowledge-based resources (Corral, 2014). A common approach to library performance measurement is the

use of the Information and Documentation – Library Performance Indicator standard (ISO 11620:2023). This standard provides a list of performance indicators – numerical, symbolic, or verbal expressions derived from library statistics and data – used to characterise library performance (International Standard Organisation, 2024). Performance indicators follow the balanced scorecard model and are organised around four areas of performance:

1. Resources, access and infrastructure: the adequacy and availability of library resources and services (e.g. staff, collections, user places).
2. Use: the usage of library resources and services (e.g. loans, downloads, and facilities use).
3. Efficiency: resource and service efficiency (e.g. costs per loan, time required to acquire or process documents, and employee productivity in media processing).
4. Potentials and development: the library's input into emerging service and resource areas and its ability to gain sufficient funding for development (e.g. percentage of staff time spent on educational services and attendances at formal training lessons by staff) (International Standard Organisation, 2024).

Based on the described research model, the following section outlines the methodology used to empirically investigate the research question.

3. Methodology

3.1 Methods and Sample

To collect data for this research, a questionnaire on intellectual capital in academic libraries was developed. It comprises four sections: the name of the library, human capital (HC, 26 items), structural capital (SC, 32 items), and relational capital (RC, 23 items), all measured on a Likert scale from 1 to 5. The intellectual capital items were selected based on a literature review and a systematic search on intellectual capital and performance in the public and not-for-profit sectors, as well as in libraries. The questionnaire items were developed through the operationalisation of theoretical constructs, following the approach of studies by Carmeli and Tishler (2004), Youndt, Subramaniam and Snell (2004), Wall (2005), Koloniari, Vraimaki and Fassoulis (2018), and Manes-Rossi et al. (2020). Performance was represented by secondary data, namely library statistics and performance indicators collected at the national level. For this research, academic library performance was investigated using 11 performance indicators, grouped into four BSC categories. The performance indicators are presented in Table 1.

Table 1: Performance indicators for Croatian academic libraries

BSC categories	Performance Indicators (PI number ISO 11620:2014 (E))
Resources, Access, and Infrastructure (PI1)	User area per capita (B.1.3.1)
	Staff per capita (B.1.4.1)
Use (PI2)	Loans per capita (B.2.1.2)
	Number of Content Units Downloaded per Capita (B.2.1.4)
	Library Visits per Capita (B.2.2.1)
	User Attendances at Library Events per Capita (B.2.2.4)
	Number of User Attendances at Training Lessons per Capita (B.2.2.5)
	Percentage of the Target Population Reached (B.2.4.1)
Efficiency (PI3)	Cost per User (B.3.4.1)
Potentials and Development (PI4)	Number of Attendance Hours at Formal Training Lessons per Staff Member (B.4.2.2)
	Percentage of Institutional Means Allocated to the Library (B.4.3.2)

The questionnaire on intellectual capital in academic libraries was distributed to the directors of 99 academic libraries in Croatia¹. A total of 52 responses were valid and complete, and were included in the further analysis. Once collected, the data on intellectual capital was compiled with corresponding performance indicator metrics for year 2023 for each library in the sample.

Data analysis was conducted in three stages. First, exploratory factor analysis identified the underlying structure of the intellectual capital scales. Second, Pearson's correlation analysis examined bivariate relationships between intellectual capital components and library performance. Third, path analysis assessed the effect of intellectual capital components on library performance.

4. Results

To examine the relationship between intellectual capital components and organisational performance, exploratory factor analysis was conducted to reduce the variables within each intellectual capital category into a smaller number of factors representing their underlying dimensions.

Factor scores for intellectual capital components are presented in Table 2. To combine variables into composite factors suitable for further multivariate analysis, the threshold for factor loading was set at $> .63$, which is considered very good (Comrey and Lee, 2013). A stricter approach to factor loading was adopted due to the smaller sample size and the requirements of further statistical analyses (Hair et al., 2019). The human capital factor comprises seven variables and explains 52.5% of the total variance. Cronbach's alpha ($\alpha = .877$) indicates high reliability for the human capital scale. Structural capital comprises 10 variables and explains 55.7% of the total variance, with excellent reliability ($\alpha = .914$). The relational capital factor retains six variables, explaining 60.2% of the total variance. Cronbach's alpha indicates excellent reliability for the relational capital scale ($\alpha = .911$).

Table 2: Factor scores for intellectual capital components

Factor	Variables retained	Variables removed	KMO	Variance explained (%)	α
HC	7	7	.856	52.5	.877
SC	10	7	.855	55.7	.914
RC	6	15	.828	60.2	.911

Descriptive statistics of the variables are presented in Table 3. Because of the heterogeneous nature of the library performance criteria used in this research, performance indicators were not combined as factors or computed scores.

Table 3: Descriptive statistics of intellectual capital components and library performance indicators

	HC	SC	RC	B.1.3.1	B.1.4.1	B.2.1.2	B.2.1.4	B.2.2.1	B.2.2.4	B.2.2.5	B.2.4.1	B.3.4.1	B.4.2.2	B.4.3.2
Mean	4.33	4.24	4.14	282	33.5	35.8	713	399	87.6	94.1	45.4	2235	30.6	13.8
Median	4.57	4.35	4.35	114	18.0	19.5	485	155	31.5	51.5	38.5	1331	16.0	11.0
SD	0.608	0.646	0.620	857	44.4	39.3	759	674	139	126	27.6	2440	46.5	13.8
Min	2.71	2.60	2.70	4	4	0	0	2	0	0	2	207	0	0
Max	5.00	5.00	5.00	6195	265	193	3150	3180	717	607	133	1410 ₁	300	73

Human capital variables received the highest scores and were rated as very important for library performance by managers. Structural capital also achieved high scores, with a mean of 4.23, but showed somewhat greater variability in managers' assessments ($SD = 0.646$), indicating more pronounced differences between libraries in the development of this component compared to human capital. Relational capital was also considered very important for performance ($M = 4.14$), though slightly less so than the other two components. The relatively low standard deviations across all three intellectual capital components ($SD = 0.61$ – 0.65) indicate limited

¹There is a total of 100 academic libraries in Croatia, but one library was excluded from this research because there is no data on library statistics and performance indicator results for 2023.

variability in responses, with managers consistently rating all three components highly ($M = 4.14\text{--}4.33$ on a 5-point scale). On the other hand, performance indicators showed greater diversity among libraries. The performance indicators do not follow a normal distribution, which is expected and common in social science research (Gunver, Senocak and Vehid, 2017). As they are measured on different scales and in different units, they were standardised and log-transformed to address violations of normality before further analysis.

To investigate the relationship between intellectual capital components and library performance, a correlation analysis was conducted. The relationships between variables were examined using Pearson's correlation coefficient (r). The correlation matrix is shown in Table 4.

Table 4: Correlation matrix

	B.1.3.1	B.1.4.1	B.2.1.2	B.2.1.4	B.2.2.1	B.2.2.4	B.2.2.5	B.2.4.1	B.3.4.1	B.4.2.2	B.4.3.2
HC	-0.063	0.043	-0.017	0.071	0.043	-0.009	-0.073	0.138	-0.142	0.197	0.062
SC	-0.056	0.015	0.093	0.147	0.015	0.263	0.152	0.120	-0.107	0.394**	0.283*
RC	-0.139	0.008	0.116	0.109	0.008	0.201	0.046	0.206	-0.178	0.250	0.081

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Structural capital is the only intellectual capital component that shows a significant correlation with library performance. Specifically, it is positively correlated with two performance indicators belonging to the Potentials and Development BSC category: *Number of Attendance Hours at Formal Training Sessions per Staff Member* ($r = .394$, $p < .01$) and *Percentage of Institutional Funds Allocated to the Library* ($r = .283$, $p < .05$).

Based on the correlation results, a path analysis was conducted in Jamovi (SEMLj module) using factor scores as inputs to examine the effects of intellectual capital components on library performance within a system of structural equations (Hair et al., 2019). Human, structural, and relational capital factor scores were used as exogenous variables, while the performance indicators that showed significant correlations with intellectual capital components were used as endogenous variables. Two separate path models were estimated because of the heterogeneity of the performance indicators.

The results of the path analysis are presented in Table 5. Model fit indices were not computed as each model included a single endogenous variable. Model 1 explained 17% of the total variance ($r^2 = .171$), while Model 2 explained 13% of the total variance ($r^2 = .134$), both of which are considered acceptable in the social sciences (Ozili, 2023). Path analysis confirmed that structural capital is the only intellectual capital component significantly related to performance in both models, and can therefore be considered a determinant of library performance. In Model 1, structural capital is significantly related to performance ($\beta = .523$, $p = .01$), while human ($\beta = -.191$, $p = .317$) and relational capital ($\beta = .014$, $p = .939$) show no significant effect. The results of Model 2 are similar: only structural capital has a significant effect on performance ($\beta = .572$, $p = .006$), while human ($\beta = -.262$, $p = .178$) and relational capital ($\beta = -.144$, $p = .431$) do not.

Table 5: Combined coefficient table for two path models

Path	Model 1 (B.4.2.2)			Model 2 (B.4.3.2)		
	Estimate	β	p	Estimate	β	p
HC	-0.3138	-.1907	.317	-0.432	-.262	.178
SC	0.8086	.5226	.010	0.885	.572	.006
RC	0.0221	.0137	.939	-0.233	-.144	.431
R ²			.171			.134

5. Discussion

This research investigates the extent to which intellectual capital components relate to library performance. The results indicate that intellectual capital is related to library performance, but the explained variance ($R^2 = .171$; .134) shows that intellectual capital components account for only a limited proportion of performance variation among Croatian academic libraries. Both correlation and path analysis confirm that, among the intellectual capital components examined, structural capital is the most significant determinant of library

performance. This indicates that codified knowledge embedded in organisational routines, structures, systems, culture, values, and processes plays a meaningful role in library performance. Although research on structural capital is limited, particularly in the library context, these results are consistent with findings from public sector organisations that establish its importance for performance and effectiveness (Barbieri et al., 2021; Melo and De la Gala Velásquez, 2022).

Although human capital is considered the most important intellectual capital component in libraries (Asonitis and Kostagiolas, 2010; Wojciechowska, 2016b; Chiganze and Sağsan, 2022), these results do not confirm effect of human capital on library performance. As managers perceive human capital as very important and well developed in libraries, these assumptions can be confirmed only at the managerial level, but are not supported by performance results. Similarly, the results revealed no significant relationship or effect of relational capital on library performance, which differs from previous studies (Asonitis and Kostagiolas, 2010; Corral, 2014). The low variability in intellectual capital component scores may have limited the ability to detect significant relationships with performance. This could partially explain the absence of significant effects for human and relational capital, and should be considered when interpreting these findings.

Potentials and Development stands out as the performance category with the strongest correlations, indicating that it is the most comprehensive indicator of intellectual capital in library performance. Existing research on library performance using the balanced scorecard approach has reached similar conclusions about the importance of Potentials and Development (Cribb, 2005), which is also supported by studies in higher education (Mansour et al., 2025) and the public sector (Massingham and Tam, 2015). As Potentials and Development directly measures the library's input into emerging service and resource areas, it suggests an important role for human capital. Although this was not confirmed by the present results, it highlights the need for further investigation into possible mediation or moderation effects.

While this study provides empirical evidence on the relationship between intellectual capital and library performance in Croatian academic libraries, certain limitations should be acknowledged when interpreting the findings. First, the study is based on a relatively small sample of 52 libraries. Although this represents more than half of all Croatian academic libraries, it introduces statistical constraints and limits the generalisability of the findings to a single national context. Future research with larger and more diverse samples is needed to draw more definitive conclusions about the role of human and relational capital in library performance. Furthermore, as library performance is a truly multidimensional construct, future research would also benefit from investigating the effect of intellectual capital on other performance perspectives or metrics.

6. Conclusion

This research aimed to empirically examine the relationship between components of intellectual capital and the performance of academic libraries in Croatia. Intellectual capital was categorised into three main components: human, structural, and relational capital. Data on intellectual capital in academic libraries were collected via an online questionnaire and combined with performance data for each library. Performance was measured using 11 indicators, grouped into four balanced scorecard perspectives: Resources, access and infrastructure (1), Use (2), Efficiency (3), and Potentials and development (4). To address the primary research question concerning the effects of human, structural, and relational capital on library performance, a two-stage analysis was conducted.

The results indicate that library managers rated intellectual capital as very important and well developed in academic libraries, which is not entirely consistent with the findings on the relationship between intellectual capital components and library performance. Intellectual capital is related to performance but accounts for only a limited proportion of the explained variance. Structural capital has emerged as the most important intellectual capital category for library performance, as it significantly correlates with performance indicators in the Potentials and Development BSC category. On the contrary, human and relational capital are not significantly related to library performance.

This study contributes to the limited empirical evidence on intellectual capital in academic libraries, but should be interpreted in light of the stated limitations. Future research should investigate other aspects of performance and their relationship with intellectual capital components. A better understanding of the role of intellectual capital in driving library performance would enable improved decision-making, strategic alignment, and further advancement of evidence-based library management.

Acknowledgements

The author wishes to acknowledge Associate Professor Martina Dragija Ivanović, PhD, and Professor Kornelija Petr Balog, PhD, who supervised doctoral thesis and guided this research.

Ethics Declaration: These results are part of PhD research conducted within the postgraduate study programme Knowledge Society and Information Transfer at the University of Zadar. The research was conducted in accordance with ethical guidelines and received approval from the University Ethics Board (02/2025). All participants were fully informed of the purpose and scope of the study and provided informed consent before participating. Participation was voluntary, and participants could withdraw at any time without consequence.

AI Declaration: AI was used for proofreading and language editing purposes, as English is not the author's first language.

References

- Asonitis, S. and Kostagiolas, P.A. (2010) 'An analytic hierarchy approach for intellectual capital; Evidence for the Greek central public libraries', *Library Management*, 31(3), p. 145.
- Bahtijarević-Šiber, F. (2014) *Strateški menadžment ljudskih potencijala - suvremeni trendovi i izazovi*. Zagreb: Školska knjiga.
- Barbieri, B. et al. (2021) 'Organizational capital: A resource for changing and performing in public administrations', *Sustainability (Switzerland)*, 13(10). doi:10.3390/su13105436.
- Bontis, N. (1998) 'Intellectual capital: an exploratory study that develops measures and models', *Management Decision*, 36(2), pp. 63–76. doi:10.1108/00251749810204142.
- Bontis, N. and Fitz-enz, J. (2002) 'Intellectual capital ROI: a causal map of human capital antecedents and consequents', *Journal of Intellectual Capital*, 3(3), pp. 223–247. doi:10.1108/14691930210435589.
- Buonomo, I. et al. (2020) 'Intangible Assets and Performance in Nonprofit Organizations: A Systematic Literature Review', *Frontiers in Psychology*, 11. doi:10.3389/fpsyg.2020.00729.
- Carmeli, A. and Tishler, A. (2004) 'The relationships between intangible organizational elements and organizational performance', *Strategic Management Journal*, 25(13), p. 1257.
- Chiganze, T. and Sağsan, M. (2022) 'Relationship between Human Capital, Innovation Capability and Employee Job Performance in Academic Libraries in Namibia, South Africa, and Zimbabwe', *Libri*, 72(3), pp. 317–334. doi:10.1515/libri-2021-0037.
- Corrall, S. (2014) 'Library service capital: The case for measuring and managing intangible assets', in Faletar Tanacković, S. and Bosančić, B. (eds.) *Assessing Libraries and Library Users and Use: Proceedings of the 13th International Conference Libraries in the Digital Age (LIDA), Zadar, 16–20 June 2014*. Zadar: University of Zadar, Department of Information Sciences, and University of Osijek, Faculty of Humanities and Social Sciences, pp. 21–32. Available at: https://lida.ffos.hr/files/LIDA_2014_Proceedings.pdf (Accessed: 8 April 2026).
- Corrall, S. (2015) 'Capturing the contribution of subject librarians: Applying strategy maps and balanced scorecards to liaison work', *Library Management*, 36(3), pp. 223–234. doi:10.1108/LM-09-2014-0101.
- Corrall, S. and Sriborisutsakul, S. (2010) 'Evaluating Intellectual Assets in University Libraries: A Multi-Site Case Study from Thailand', *Journal of Information and Knowledge Management*, 9(3), pp. 277–290.
- Cribb, G. (2005) 'Human Resource Development: impacting on all four perspectives of the Balanced Scorecard', *Libraries—A Voyage of Discovery: World Library and Information Congress, 71st IFLA General Conference and Council, August 14–18, 2005, Oslo, Norway*, p. 12.
- Drucker, P.F. (1993) 'The rise of the knowledge society', *The Wilson Quarterly*, 17(2), pp. 52–72.
- Edvinsson, L. and Malone, M. (1997) *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower*. New York: HarperBusiness.
- Farah, A. and Abouzeid, S. (2017) 'The impact of intellectual capital on performance: Evidence from the public sector', *Knowledge Management and E-Learning*, 9(2), pp. 225–238.
- Gunver, M.G., Senocak, M.S. i Vehid, S. (2017) „To Determine Skewness, Mean and Deviation with a New Approach on Continuous Data“, *PONTE International Journal of Science and Research*, 73(2). doi.org/10.21506/j.ponte.2017.2.34.
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2019) *Multivariate Data Analysis*. Cengage.
- Hiller, S., Kyrillidou, M. and Self, J. (2008) 'When the evidence is not enough: Organizational factors that influence effective and successful library assessment', *Performance Measurement and Metrics*, 9(3), pp. 223–230. doi:10.1108/14678040810928444.
- Iivonen, M. and Huotari, M.-L. (2007) 'The University Library's Intellectual Capital', in Garten, E.D. et al. (eds.) *Advances in Library Administration and Organization*. Emerald Group Publishing Limited, pp. 83–96. doi:10.1016/S0732-0671(07)25004-7.
- International Organization for Standardization (2023) *ISO 11620:2023: Information and documentation — Library performance indicators*. Geneva: ISO. Available at: <https://www.iso.org/standard/83126.html> (Accessed: 08 April 2026).
- Kaplan, R.S. and Norton, D.P. (1996) 'Using the Balanced Scorecard as a Strategic Management System', *Harvard Business Review*, pp. 1–14.

- Keong Choong, K. (2008) 'Intellectual capital: definitions, categorization and reporting models', *Journal of Intellectual Capital*, 9(4), pp. 609–638. doi:10.1108/14691930810913186.
- Koenig, M.E.D. (1996) 'Intellectual Capital and Knowledge Management', *IFLA Journal*, 22(4), pp. 299–301. doi:10.1177/034003529602200411.
- Koenig, M.E.D. (1997) 'Intellectual capital and how to leverage it', *The Bottom Line*, 10(3), pp. 112–118. doi:10.1108/08880459710175368.
- Kostagiolas, P.A. (2013) 'Managing knowledge capital in public libraries for a knowledge-driven socioeconomic environment', *Library Management*, 34(8/9), p. 677.
- Kostagiolas, P.A. and Asonitis, S. (2009) 'Intangible assets for academic libraries: Definitions, categorization and an exploration of management issues', *Library Management*, 30(6/7), pp. 419–429. doi:10.1108/01435120910982113.
- Laallam, A. et al. (2022) 'The components of intellectual capital and organisational performance in waqf institutions: evidence from Algeria based on structural equation modelling', *Journal of Islamic Accounting and Business Research*, 13(7), pp. 1110–1136. doi:10.1108/JIABR-07-2021-0192.
- Massingham, P.R. and Tam, L. (2015) 'The relationship between human capital, value creation and employee reward', *Journal of Intellectual Capital*, 16(2), pp. 390–418.
- Melo, L.B. and Pires, C. (2008) *Performance evaluation of academic libraries: implementation model*. University of Ioannina. Available at: <http://eprints.rclis.org/12374/>.
- Melo, N.A.P. and De la Gala Velásquez, B. (2022) 'The mediating role of structural capital in the relationship between human capital and performance in the public administrations of Mexico and Peru', *Estudios Gerenciales*, 38(164), pp. 320–333. doi:10.18046/j.estger.2022.164.5087.
- Meritum Project (2002) *Guidelines for Managing and Reporting on Intangibles (Intellectual Capital Report)*. Madrid: European Commission.
- Organisation for Economic Co-Operation and Development (2008) *Intellectual Assets and Value Creation: Synthesis Report*. Available at: https://www.researchgate.net/publication/333728467_INTELLECTUAL_ASSETS_AND_VALUE_CREATION_SYNTHESIS_REPORT_ORGANISATION_FOR_ECONOMIC_CO-OPERATION_AND_DEVELOPMENT (Accessed: 08 April 2026).
- Ozili, P.K. (2023) 'The Acceptable R-Square in Empirical Modelling for Social Science Research', *Social Research Methodology and Publishing Results: A Guide to Non-Native English Speakers*. IGI Global Scientific Publishing, str. 134–143. <https://doi.org/10.4018/978-1-6684-6859-3.ch009>.
- Poll, R. and Boekhorst, P. (2008) *Measuring Quality: Performance Measurement in Libraries*. 2nd edn. Munich: K. G. Saur. doi:10.1515/9783598440281.
- Sveiby, K. (2001) 'A knowledge-based theory of the firm to guide in strategy formulation', *Journal of Intellectual Capital*, 2(4), pp. 344–358. doi:10.1108/14691930110409651.
- Tadić, I. (2021) 'Važnost mjerenja elemenata intelektualnog kapitala poduzeća', in Kolaković, M. and Mišević, P. (eds.) *Intelektualni kapital - 30 godina teorije i prakse u svijetu i Hrvatskoj*. Zagreb: Hrvatska gospodarska komora, pp. 185–202.
- Town, S. (2014) 'The value of people: A review and framework for human capital assessment in academic and research libraries', *Performance Measurement and Metrics*, 15(1–2), pp. 67–80. doi:10.1108/PMM-05-2014-0019.
- White, L.N. (2007a) 'Imperfect reflections: the challenges in implementing human capital assessment in libraries', *The Bottom Line*, 20(4), pp. 141–147. doi:10.1108/08880450710843969.
- White, L.N. (2007b) 'Unseen measures: the need to account for intangibles', *The Bottom Line*, 20(2), pp. 77–84. doi:10.1108/08880450710773011.
- Wojciechowska, M. (2016a) *Intangible Organizational Resources: Analysis of Resource-Based Theory and the Measurement of Library Effectiveness*. London: Palgrave Macmillan.
- Wojciechowska, M. (2016b) 'Intangible organizational resources in Polish libraries: Results of research among directors and executives', *Library Management*, 37(1/2), pp. 91–110. doi:10.1108/LM-08-2015-0055.