



Intellectual Capital In Higher Education Institutions : A Contemporary Vision of Management Models And Investment Mechanisms

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Abstract:

This study examines intellectual capital in higher education institutions as a strategic resource for enhancing performance and creating value. It aims to analyze contemporary models for its management, revealing their synergies and differences, with a focus on mechanisms for investing in and valuing it. The study employs an analytical approach, examining selected models, most notably those of Leitner, Bueno, and Secundo. It reveals that these models, despite their differing starting points, converge on the importance of human, structural, and relational capital. However, they differ in how these components are linked to university functions, outputs, and impacts. The study concludes that maximizing the strategic value of intellectual capital requires moving beyond mere management and measurement to its investment and valuing within an integrated vision that connects it to education, research, and the third mission: creating sustainable value.

- **Keywords:** Intellectual capital; Higher education institutions; Management models; Investment; Valuing; Value creation.

1. Introduction

Leitner et al.¹ indicate that intense national and international competition to attract students and researchers, benefit from research fund support and other resources, as well as ranking and reputation, poses a continuous challenge for higher education institutions. This necessitates that these institutions view the development of intellectual capital as essential for building the future workforce, stimulating organizational and technological innovation, and fostering networks that facilitate the exchange of industrial and academic expertise. Furthermore, as a performance metric, intellectual capital can be to higher education institutions what a budget and income statement are to private companies. Disclosing the intellectual capital of higher education institutions can also influence the funding and financial resources allocated to them by the state.

In the same vein, Secundo et al.² point out that higher education institutions today must shift their focus from teaching and research to contributing to societal and economic development, or what is termed the "third mission." This third mission is defined as any activity undertaken by higher education institutions outside of their teaching and research missions, in relation to external environments. This requires these institutions to engage in an



ecosystem where they generate and develop intellectual capital through methods or activities other than research and education, and with the participation of stakeholders. Higher education institutions can have a significant impact on economic and social development beyond research, but to be effective, their intangible assets must align with the diverse needs of stakeholders.

In confirmation of the above, Sultanova et al.³ believe that the application of intellectual capital in higher education institutions is very natural, given that these institutions operate in a knowledge-intensive environment, and that knowledge is the main input and output of research and education activities. They consider that the main reasons for its application are to improve the competitiveness of higher education institutions through the effective management of the intellectual capabilities of professors and researchers, and to promote innovation through a good understanding of the impact of intellectual capital on the ability of higher education institutions to innovate.

Todericiu & Serban⁴ note that the growing interest in intangible assets has extended from corporations to public institutions such as higher education institutions over the past decade. This is because these institutions are key players in national innovation systems. The importance of intellectual capital in higher education institutions stems from the relationship between intangible asset management and the activities and operations of these institutions. Knowledge is the most important element in most of their inputs and outputs, and many of their operations may even be purely knowledge-based.

Emphasizing the importance of intellectual capital in higher education institutions, Ramirez et al.⁵ indicate that intellectual capital enables higher education institutions to be better positioned to:

- Create transparency regarding the use of public funds;
- Communicate the achievements of research, training, and innovation and their benefits to stakeholders;
- Demonstrate the development of intangible assets;
- Communicate (new) organizational values;
- Demonstrate their competitiveness.

Given the unique characteristics of higher education institutions, their intellectual capital, in terms of its main components, does not differ from that of other organizations. However, the nature of the elements comprising these dimensions is influenced by the specific human resources, organizational structures, and relationships that characterize these institutions. Therefore, intellectual capital in the university environment can be viewed through three main components: human capital, structural capital, and relational capital.

In light of the importance and multifaceted nature of intellectual capital, a number of models have emerged that seek to identify, measure, and manage these resources within higher education institutions. Ramirez et al.⁶ indicate that the management and evaluation of intangible resources in higher education institutions have largely relied on models originally developed for business organizations. Despite this, the specific characteristics of higher



education institutions have not led to a consensus on a common model for identifying, measuring, and managing these resources. Furthermore, the various models reveal a divergence in how intangible resources are identified, monitored, and managed within universities. Despite the multiplicity of these models and the diversity of their approaches, the lack of a common model for identifying, measuring, and managing intangible resources in higher education institutions remains a theoretical and practical challenge. The differences among models in defining the components of intellectual capital, in interpreting the relationships between them and the processes of teaching, research, and the third mission, and in identifying the resulting outputs and impacts, indicate the need for a more integrated approach that encompasses these dimensions within a single framework.

In this context, the challenge is not limited to identifying or measuring intellectual capital, but extends to investing in it, valuing it, and transforming it into value. The concept of investing in intellectual capital refers to the efforts that organizations direct toward strengthening and developing human talent and upgrading technologies and skills that enhance competitive advantages and allow for the creation of value that is difficult for competitors to imitate. Therefore, there is a need to shift from a perspective focused solely on acquiring and managing intellectual capital to a more comprehensive perspective that emphasizes its investment, valuing, and linking its components to the core functions of higher education institutions, particularly education, research, and the third mission. This allows for the transformation of intellectual resources into educational, research, economic, and social outputs and impacts. This shift provides a suitable foundation for building an integrated framework that leverages the common elements of contemporary models rather than treating them as separate entities.

Accordingly, this study aims to analyze contemporary models for managing intellectual capital in higher education institutions, revealing their points of convergence and divergence, with a focus on the mechanisms for investing and valuing intellectual capital. The ultimate goal is to develop an integrated framework that connects the components of intellectual capital, its management, university functions, outputs, and impacts.

The central research question is: **How can intellectual capital be managed, invested in, and valued within higher education institutions within an integrated framework that links its components to university functions, outputs, and impacts?**

2. Framing intellectual capital in higher education

2.1. Human Capital

The concept of human capital in higher education institutions refers to all individuals who develop their activities within the institution's context, such as professors, researchers, managers, administrative staff, and others like doctoral students and students in general. This often involves a convergence of tacit and explicit knowledge. The human capital of professors and researchers lies in both teaching abilities and research competencies (innovation in teaching, quality of teaching, quality of research, participation in national and international projects, percentage of physicians, etc.).⁷



The concept of human capital also refers to the intangible value inherent in individual competencies. This includes the experience, knowledge, and expertise of researchers, professors, technical and administrative staff, and students⁸. It thus represents the explicit and tacit knowledge of higher education institution personnel acquired through formal and informal teaching and learning processes, embodied in their activities.⁹

2.2. Structural Capital

The concept of structural capital in higher education institutions refers to the resources within the institution itself, i.e., what remains without personnel. This includes databases, research projects, research infrastructure, research processes and routines, university culture, image, and reputation¹⁰. It thus represents the explicit knowledge related to the internal processes of disseminating, communicating, and managing scientific and technical knowledge within the organization (which can be organizational and technological).¹¹

2.3. Relational Capital

Cricelli et al.¹² indicate that establishing links with external bodies or organizations is a fundamental component of relational capital in higher education institutions. Internal and external researcher mobility, hosting and participating in meetings and conferences, attracting international scholars, participating in international research programs, and collaborative agreements constitute essential contributions to relational capital.

The concept of relational capital in higher education institutions refers to intangible resources capable of generating value related to the institution's internal and external relationships. This includes relationships with public and private sector partners, social media presence and image, industry involvement in training activities, collaboration with international research centers, faculty connections, international student exchanges, and international recognition¹³. In short, it encompasses a wide range of economic, political, and institutional relationships developed by higher education institutions.¹⁴

3. Contemporary Models of Intellectual Capital Management in Higher Education Institutions

3.1. The Karl-Heinz et al. Leitner Model for European Universities

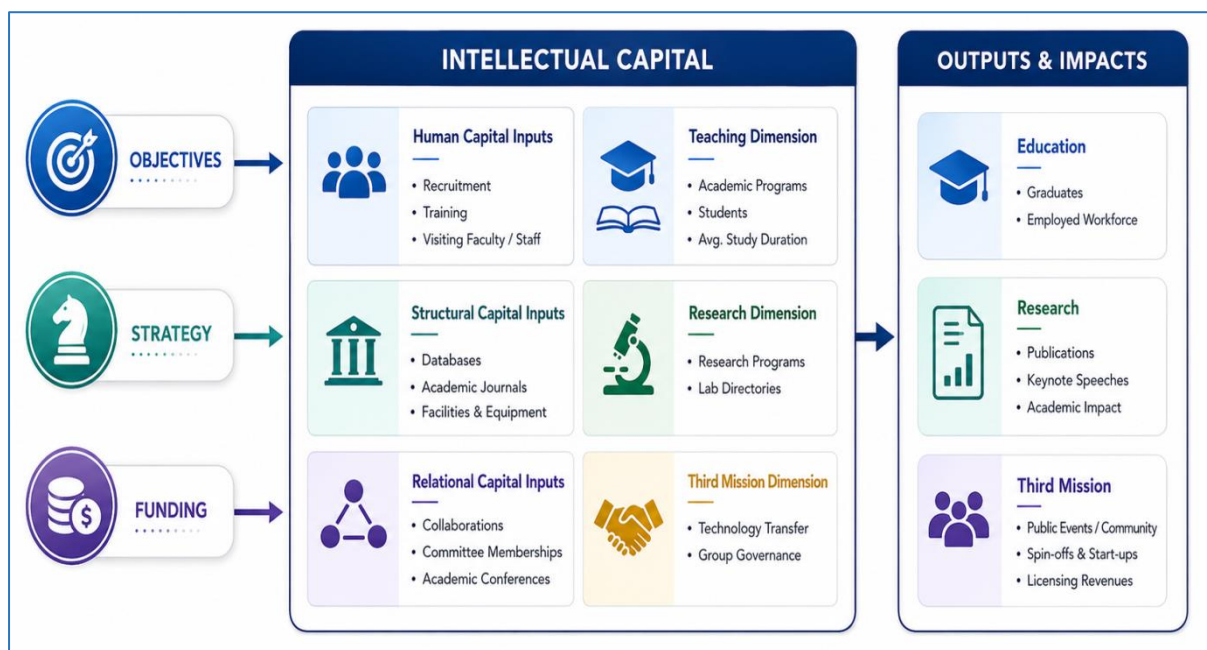
This model was proposed by Leitner K.-Heinz in 2004 as a framework for disclosing intellectual capital in Austrian universities¹⁵. It was later developed by the same researcher and a group of other researchers who collaborated with him on the "Quality Assurance in Higher Education through Accreditation and Auditing" project, launched by the Romanian Higher Education and Research Funding Executive Agency (UEFISCDI) with co-funding from European social funds. The model proposes managing and disclosing intellectual capital in European higher education institutions by focusing on research and teaching activities as key areas that each institution should disclose.

The model envisions the process of higher education institutions transforming their intangible resources when carrying out their various activities (research, education, etc.), which leads to the production of different outputs according to general and specific objectives. The model can be described as an operational approach that focuses not only on



the different forms of intangible assets or intellectual capital, but also on questions related to investment in these assets by higher education institutions and how this affects outputs and effects. The model assumes that value creation in higher education institutions is achieved through the organization of human, technological, and organizational resources to promote knowledge creation in research and education activities.¹⁶

Figure 1: LeitnerK-Heinz &al. model



Source:Karl-HeinzLEITNER *et al*, **A Strategic Approach for Intellectual Capital Management in European Universities: Guidelines for Implementation**, UEFISCDI Blueprint Series,1st Edit, Bucharest, 2014, p.40.

As illustrated in the previous figure, the model distinguishes between three basic elements of intellectual capital in higher education institutions, which are not very different from those that constitute intellectual capital in profit-driven organizations. The knowledge possessed by professors, researchers, and other administrative and technical staff represents what is known as human capital, while databases and routine procedures represent structural capital, and the institution's relationships and research collaboration networks represent relational capital. The model also distinguishes between three basic performance processes: education, scientific research, and the third task (marketing research, transferring knowledge to the public), through which intellectual capital, with its three elements, represents an input for knowledge production. According to this model, intellectual capital represents all forms of intangible resources that provide the knowledge base that enables higher education institutions to carry out their tasks and allows them to enhance their competitiveness in the future.¹⁷



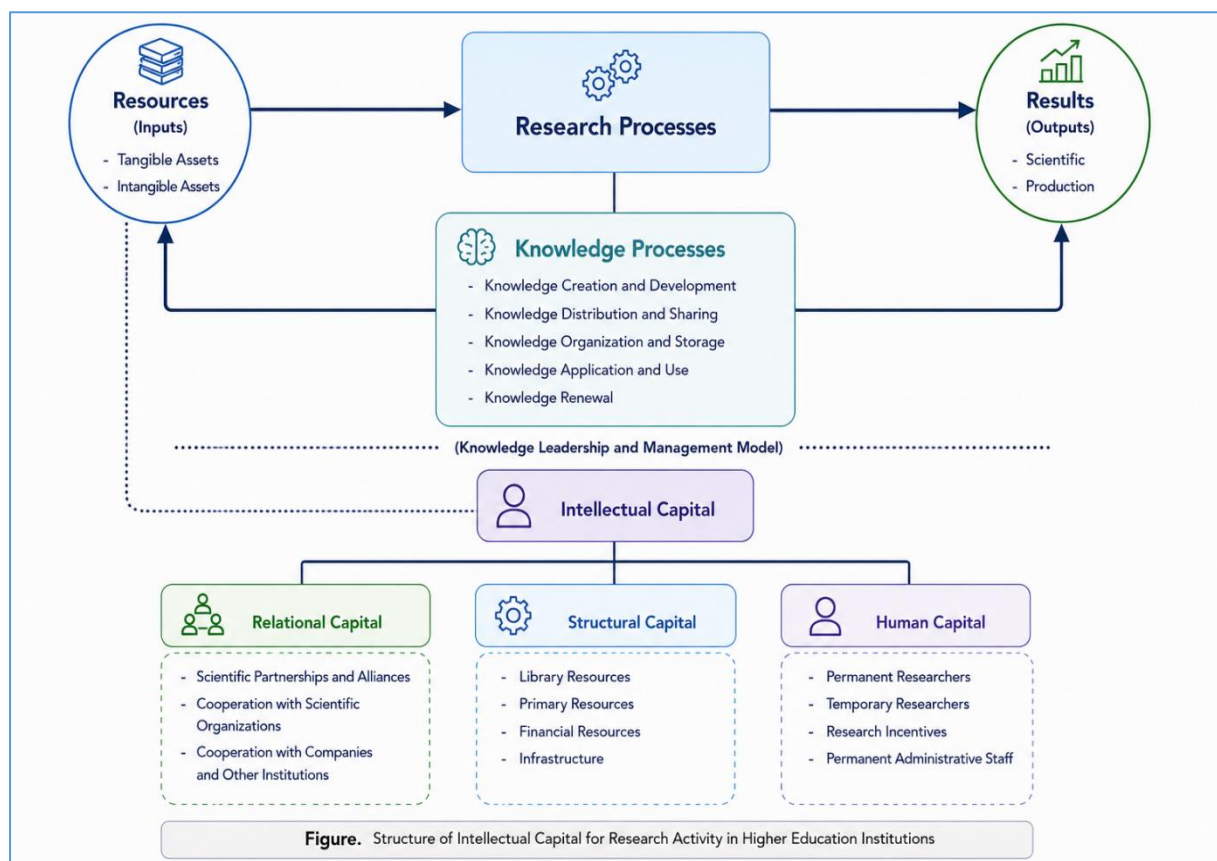
3.2. The Bueno Eduardo et al. Model for Spanish Universities

This model was first proposed in 2002 by Bueno Eduardo and a group of researchers from the Institute of Business Administration (ISBA) within the framework of the "Intellectual Capital Program: 2000-2003" project¹⁸. It was presented at the international conference "Transparency Foundation: The Value of Intangibles," held in Madrid on November 25-26, 2002. The model was developed taking into account the research activity of higher education institutions, considering research activity as a result of these institutions' use of their intellectual capital. It also considers research processes as dependent on resources (inputs) to obtain results (outputs).¹⁹

As illustrated in Figure2, the resources included in the Knowledge Management and Leadership model are those described in the intellectual capital structure. The model assumes that higher education institutions use resources (inputs) to conduct various research processes to obtain the following results (outputs):²⁰

- Scientific output (articles and books, patents and any other type of copyright, research projects carried out, lectures and presentations at conferences and meetings);
- The social perception of the institution;
- The development of intellectual capital within the institution;
- The establishment of a research network among institutions.

Figure 2: Bueno Eduardo et al. model





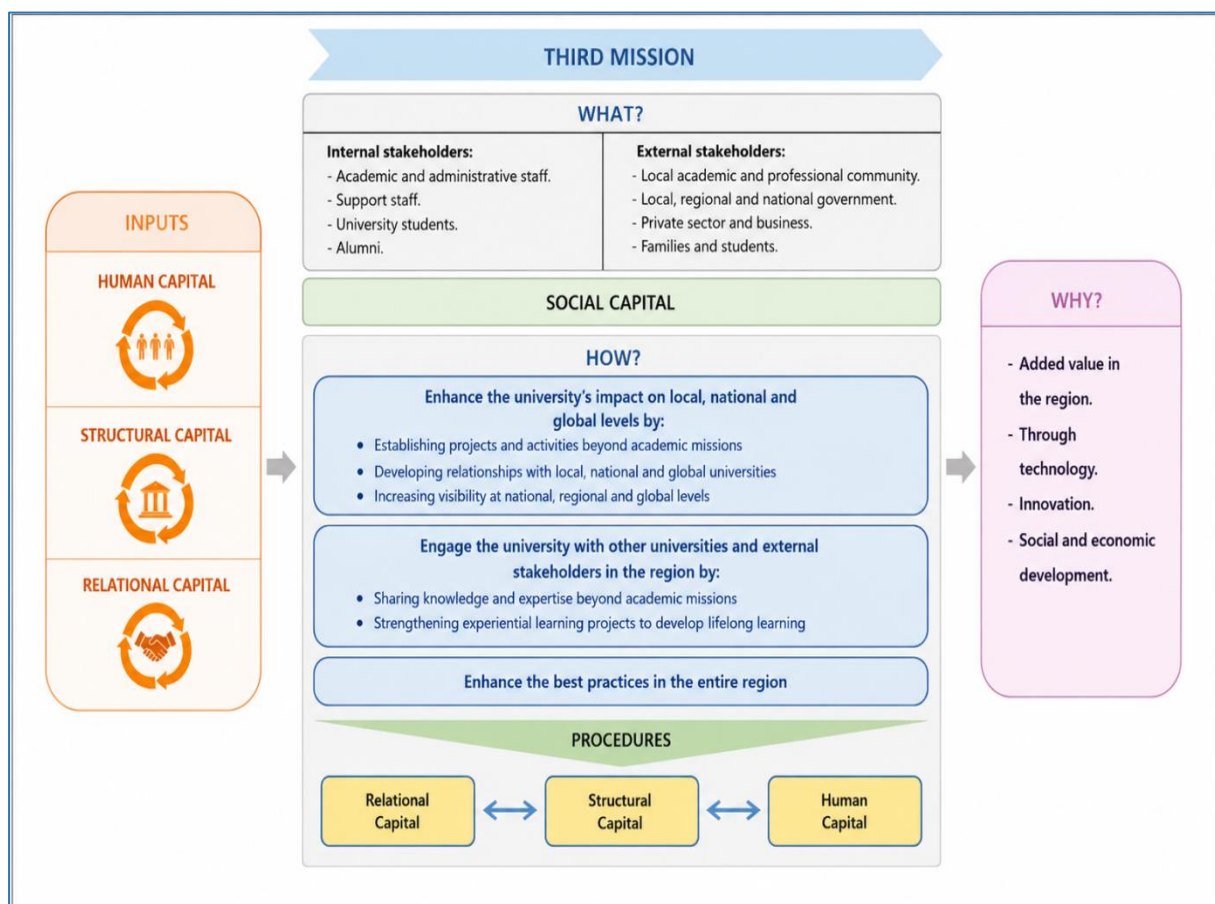
Source: Yolanda RAMIREZ *et al*, **Relevance of Intellectual Capital: An Analysis of Spanish Universities**, International Journal of Economics and Management Engineering, Vol.8, No.5, 2014, p.1447.

In general, this model aims to identify the general characteristics of research processes in higher education institutions, and to promote the relationship between cause and effect, or between inputs and outputs in the research process. It also aims to try to suggest ways to manage intellectual capital to improve research performance in higher education institutions.²¹

3.3. The Secundo & al. model for Ca' Foscari University

The model was first proposed by Secundo et al. in 2016 as a model for managing intellectual capital in universities according to the approach or methodology of collective intelligence²². It was developed by the same group and applied in 2018 to Ca' Foscari University in Venice (Italy). The model assumes a two-way relationship between human and relational capital, where relationships are created between scientific education institutions and companies through human capital, while an impact on stakeholders and value is created through relational capital, while structural capital creates the appropriate environment to achieve the objectives of the third mission.²³

Figure 2: The Secundo & al. model for Ca' Foscari University





Source: Giustina SECUNDO *et al*, **Intellectual Capital Management in the Fourth Stage of IC Research: A Critical Case Study in University Settings**, Journal of Intellectual Capital, Vol.19, No.01, 2018, p.163.

As illustrated in the figure above, the model highlights the management of intellectual capital in higher education institutions as the genome of collective intelligence, through four key questions:

- "What?": This defines the university's objectives, including education, scientific research, and social and regional development.
- "Who?": This represents the human capital within the university that collectively contributes to the third mission. It includes internal stakeholders (boards, administrative and technical staff, researchers, professors, students, etc.) and external stakeholders (other universities and research institutions, investors, corporations, governments, etc.).
- "Why?": This encompasses the university's vision, which defines the objectives and motivations behind intellectual capital management related to the third mission:
 - ✓ Developing entrepreneurial competence in human capital for innovation and development;
 - ✓ Technology transfer and innovation linked to the concept of employability and development;
 - ✓ Social engagement and regional development that promotes knowledge sharing and fosters entrepreneurial skills to create social value.

Stakeholder interests are typically diverse and complex. Therefore, this model supports higher education institutions in achieving their third mission by coordinating intellectual capital within a system of collective intelligence. Collective intelligence fosters collaboration to create more favorable conditions for managing intellectual capital when both internal and external stakeholders are involved.

4. Investment in and Valorization of Intellectual Capital in Higher Education Institutions

4.1. Human Capital Investment

Manuti & Pasquale Davide²⁴ indicate that what truly differentiates organizations in terms of business success is the knowledge they possess—that is, the capital of imagination and creativity expressed by their members. This stems from the close link between human



capital and the added value that individuals bring to the organization, making it the actual foundation of competitive advantage. As Schultz describes it, human productivity, measured by the contribution of labor to production, is far greater than all other forms of wealth combined.²⁵

Given the importance of human capital and its vital role in wealth creation and accumulation, it is essential for organizations to invest in it to the extent that allows them to keep pace with future developments and challenges. Investing in human capital means spending time, money, and effort on developing individuals' skills and talents in a way that encourages them to increase their productivity²⁶. To confirm this, Catano & al.²⁷ refer to a study conducted by the Labour Foundation and the Institute for Employment Studies in England, which demonstrated that organizations with good human resources practices enjoy higher profit margins and productivity than those without. The study also concluded that if an organization increases its investment in human capital by 10%, it will achieve total profits of £1,500, or approximately \$2,300, per employee.²⁸

- **Strategic Recruitment**

In today's highly competitive business environment, characterized by fluctuating customer expectations, organizations are no longer satisfied with simply selling a product or providing a service. It has become essential for them to attract and employ high-quality individuals who can effectively respond to this changing environment.

Recruitment encompasses all the procedures an organization needs to undertake to attract individuals interested in working for it, select the best candidates, and ensure their stability in their new jobs²⁹. Recruitment is defined as the process of attracting individuals who can make an organizational contribution to fill a specific role or position.³⁰

For recruitment and hiring purposes, organizations use various methods, including traditional ones such as newspapers, magazines, and employment agencies, and modern ones such as organizational websites and social media pages. Using the internet – in its various applications – is considered one of the best and least expensive ways to attract the largest possible number of applicants for positions within the organization. This is confirmed by Stephen Bach, who points out that organizations that rely on the internet for recruitment benefit from an 85% reduction in recruitment costs. This is because it allows candidates to apply directly for the jobs they desire, and it also allows the organization to collect data about candidates easily and at a lower cost.³¹

To emphasize the importance of investing in recruitment and hiring, Lussier & Hendon³² point out that if an organization succeeds in attracting and hiring the right individuals with the right attitudes and skills, it will be a good start to success. However, if it uses or hires individuals who do not have the desire to work or do not possess the appropriate skills, it will face great difficulties in succeeding in the long term. This is also confirmed by Catano & al.³³ considering that effective recruitment and hiring practices mean the difference between the success and failure of the organization, as differences in skills between job candidates translate into differences in performance, which will have economic consequences



for the organization. Hiring individuals with the appropriate skills or skills above the required level leads to positive economic results for the organization, while hiring someone who does not possess the appropriate skills can lead to a disaster for both the person and the organization.

- **Strategic Investment in Training and Capability Enhancement**

In today's competitive environment, organizations no longer need to invest solely in human resources capable of rapid learning. Instead, they need to invest in human capital that can quickly and consistently translate new learning into outstanding performance, whether for individuals, teams, or the organization as a whole. Training is one of the most important mechanisms through which organizations can invest in their human capital, enabling them to transform new learning and knowledge into benchmark performance levels.

Training is defined as the process of bridging the gap between current performance and desired benchmark performance through various methods such as mentoring, guidance, peer collaboration, and subordinate participation. Its aim is to empower individuals to actively participate in work and deliver better performance, thereby improving organizational performance³⁴. It is also defined as a planned process that aims to modify behavior, knowledge, or skills through learning experiences to achieve effective performance in an activity or set of activities³⁵. Therefore, it is a type of planned and systematic activity that results in an enhanced level of skill, knowledge, and competence necessary for effective work performance³⁶. Unlike education, training typically has immediate application and is generally completed in a shorter timeframe.³⁷

According to Becker³⁸, training in organizations is divided into two types: general training and specialized training. General training is defined as training that has the same effect on the productivity of trainees across all organizations. Specialized training, on the other hand, is the type of training that affects the productivity of trainees only within the organization providing it; its impact does not transfer from one organization to another.

Regarding the importance of investing in training, Lussier & Hendon³⁹ point out that modern organizations cannot progress significantly without continuously training their employees. Research supports the idea that employees who participate in ongoing training processes are less likely to leave the organization and less likely to engage in negligent behavior. Similarly, Shahin & Javed⁴⁰ indicate that organizations that provide comprehensive training that expands the skills, knowledge, and attitudes of individuals are the most successful in retaining their employees.

The importance of investing in training is also evident in its effective role in eliminating or addressing performance weaknesses by increasing productivity and improving performance, as well as creating positive attitudes among individuals towards work and the organization. In the same context, Elnaga & Imran⁴¹ point out that training programs not only develop the performance of individuals, but also help the organization to make optimal use of its human resources. Therefore, the organization is obligated to plan such programs that allow individuals to enhance their abilities and competencies required in the workplace. Training



not only develops the abilities of individuals, but also increases their ability to think and be creative in order to make better decisions in a timely and more productive manner. In addition, training enables employees to deal with customers effectively and respond to their complaints in a timely manner.

Furthermore, Kundu & Munjal⁴² emphasize that increasing levels of globalization, outsourcing, and innovation require investment in human capital in general and organizational training in particular. Investing in training and fostering a culture of learning is a key driver for building an organization's creative capabilities. Through organizationally funded training programs, individuals develop increased levels of innovation capacity because they often share their new knowledge and provide feedback to their colleagues.

4.2. Structural Capital Investment

Meyer & al.⁴³ point out that while both human and relational capital depend on an organization's individuals, structural capital is the knowledge captured or allocated to the organization at the organizational level after individuals leave.

Emphasizing the importance of investing in structural capital, Chen⁴⁴ points out that many studies point to the positive impact of structural capital on the competitive advantages of organizations. Organizations that pay a lot of attention to investing in their structural capital succeed in improving their image among their audiences. They also succeed in enhancing their production efficiency and entering new markets, thus increasing their competitive advantages. In the same context, Sharabati & Ibrahim Nour⁴⁵ presented in their study dozens of research and studies that It emphasizes the importance of investing in structural capital and its positive impact on the profitability of organizations and their market value, as well as its strong and positive relationship with performance indicators of organizations, both for-profit and non-profit.

- **Strategic Investment in Technological Infrastructure and Digital Assets**

Investing in technology today is no longer an option or simply an unjustified race among organizations to possess the latest technologies and applications. It has become more than a necessity. Competition in today's business environment is primarily based on technology and its outputs. Many traditional jobs and processes that were once performed through investment in human resources can now be performed with high efficiency through what is known as artificial intelligence. Therefore, organizations that view technology as something not worth investing in will find themselves facing results that are incomparable to those of organizations that invest in technology effectively.

Investing in technology in its various forms and types contributes to supporting decision-makers and helping everyone achieve their goals. Furthermore, by optimally utilizing social media, organizations can communicate effectively with their customers and can contribute to developing and maintaining a strong organizational identity and a good brand reputation, thus enhancing customer loyalty.⁴⁶



- **Investing in Continuous Improvement and Institutional Excellence**

In defining continuous improvement, Khan & al.⁴⁷ state that "continuous improvement is a philosophy; it is essentially a continuous struggle to eliminate the root causes of problems, which can be achieved through incremental improvements rather than new capital investments. Therefore, continuous improvement is essentially about selecting the right resources at the right time and in the right place." Continuous improvement is also defined as a systematic effort to find and implement new ways of doing work—that is, to make frequent and proactive improvements.⁴⁸

Emphasizing the importance of investing in continuous improvement, Fryer & al.⁴⁹ point out that continuous improvement is essential in all sectors, as continuous improvement processes, through product control, lead to improved cost, reliability, and greater customer satisfaction. These processes can also help reduce defects and errors, thus helping to improve the services provided. Steve⁵⁰ also points out that good investment in continuous improvement can lead to comprehensive improvements in the efficiency and effectiveness of both current and emerging processes. Organizations with high continuous improvement capabilities are more able to explore innovative ideas or solutions to improve the effectiveness and efficiency of processes that support their social performance⁵¹, while organizations that do not adopt and invest in continuous improvement find themselves bound to follow destructive management patterns.⁵²

4.3. RelationalCapital Investment

Relational capital is linked to establishing relationships between an organization and its environment. These relationships can be established with customers, intermediaries, suppliers, government bodies, and other stakeholders, such as public figures, lobbying groups, local communities, creditors, and investors. Bontis⁵³ emphasizes that the relationships an organization establishes with its environment enable it to acquire knowledge that increases throughout the organization's lifespan and becomes a source of great potential that is difficult to quantify. Investing in relationships can lead to improved organizational performance, increased shareholder value and customer retention rates, as well as enhanced cooperation and strategic partnerships.⁵⁴

- **Investing in Customer Relationship**

In today's complex and ever-changing business environment, and amidst the fierce competition among organizations to adopt modern marketing methods that guarantee the acquisition of the largest possible number of customers and, consequently, meet their growing and evolving needs to foster long-term loyalty, investing in customers is one of the most important types of investment that organizations must prioritize and dedicate the necessary resources and support to. In this context, Storbacka⁵⁵ points out that while most organizations do invest in customers, these investments are often made in an unsystematic manner and are not subject to the same scrutiny as investments in fixed assets, production facilities, and product development initiatives, making it difficult to gain a comprehensive understanding of the situation.

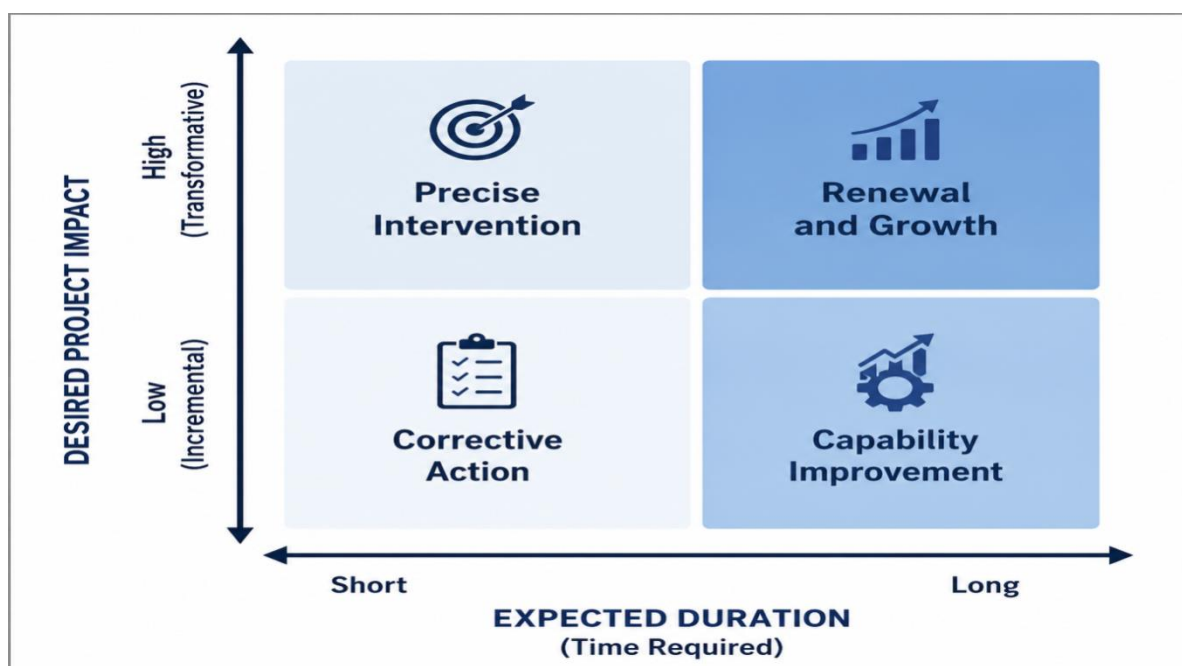


Similarly, Storbacka⁵⁶ believes that defining customer investment strategies involves two fundamental dimensions; The first dimension relates to profitability, i.e., the expected difference between the return on invested capital (ROCI) in nurturing a particular customer and the cost of capital that the organization invests in the customer. The second dimension relates to the expected period during which the organization will be able to maintain returns exceeding the cost of capital for a particular customer, which investors often describe as the competitive advantage period (CAP). Therefore, based on this, the organization can distinguish between four types of customer investment strategies: investment in renewal and growth, investment in maintaining cash flow, investment in improving capabilities, and finally, divesting some customers. The following figure illustrates this:

Figure4: Customer investment strategies

Source:Kaj STORBACKA, *Create your Future by Investing in Customers*, Velocity Magazine, Vol.06, No.01, 2004, p.20.

In addition to the strategies mentioned in the figure above, customer investment is also achieved through Customer Relationship Management (CRM), considered an optimal



strategy. Given the changes in today's markets and the expansion of purchasing options, many organizations are racing to re-establish relationships with their existing and new customers. Those organizations that succeed in this race are those that focus on investing in their customers through CRM applications.⁵⁷

Investing in customers through CRM applications leads to increased competitiveness for organizations, higher revenues, lower operating costs, and enhanced customer satisfaction and retention rates.⁵⁸



- **Strategic Investment in Community Service and Social Impact**

The concept of investing in community service is linked to the concept of social responsibility, which in turn is linked to the concept of sustainable development. With rapid technological advancements and globalization, governmental and social pressures on organizations to assume their responsibility towards society and its economic and environmental surroundings have increased. Social responsibility requires organizations to consider the social and environmental impacts of their activities in order to adopt best practices and thus contribute to improving society and protecting the environment.⁵⁹ Social responsibility is a new dimension for organizations, related to their sustainability and their impact on the economic, social, and environmental landscape. It is a commitment undertaken by a group of individuals to interact with society and contribute to its improvement.⁶⁰

The concept of social responsibility is based on a set of dimensions, which together include all aspects that can be affected by the activity of these organizations. The social dimension, the environmental dimension, and the economic dimension are among the most important of these dimensions, in addition to the ethical dimension and the legal dimension. With regard to the social dimension, organizations seek to adopt values and provide products and services that are consistent with the values and requirements of society, as it is the most important segment of beneficiaries of their work. As for the environmental dimension, organizations work to take all the necessary measures that would reduce the negative impact of their work or products on the environment. As for the economic dimension, it expresses the commitment of organizations to the rules of fair and free competition and to contribute to increasing capital by providing quality products and services that are consistent with the aspirations of the local community and all stakeholders.

5. Conclusion

This study demonstrated that intellectual capital is no longer merely a collection of intangible assets possessed by higher education institutions, but rather a strategic resource linked to their capacity to produce, utilize, renew, and transform knowledge into institutional and societal value. This importance is particularly pronounced in higher education institutions, given that most of their core activities rely on knowledge, human competencies, networks, relationships, organizational structures, and technology.

Furthermore, the analysis of contemporary literature and models revealed that intellectual capital in higher education institutions is primarily composed of human, structural, and relational capital. The value of these components is not realized simply by possessing them, but rather through their management, development, sharing, utilization, and renewal. The models studied, particularly those of Leitner, Bueno, and Secundo, demonstrated that the management of intellectual capital is directly linked to the university's core functions: teaching, research, and its third mission. The interaction between these components and functions leads to the production of knowledge, educational, research, and societal outputs.



The study also concluded that the multiplicity of contemporary models reflects the richness of the literature, but simultaneously reveals the absence of a unified framework that comprehensively integrates the components of intellectual capital, its management processes, mechanisms for its investment and valorization, and its outputs and impacts. From this perspective, the study proposed an integrated framework that considers intellectual capital as a strategic input, its management as a mechanism for transforming knowledge resources into value, and education, research, and the third mission as key areas for utilizing these resources. Educational, research, and societal outputs and impacts serve as key indicators for measuring the value achieved.

Therefore, the real challenge facing higher education institutions lies not only in possessing high-quality intellectual capital, but also in their ability to manage it strategically, invest in and value it, and link its components to their core objectives and functions. This allows for the transformation of knowledge, competencies, and relationships into measurable results and sustainable value for the institution, its stakeholders, and society.

6. Recommendations:

- Develop an institutional strategy for intellectual capital: Higher education institutions should integrate intellectual capital management into their strategic planning and directly link it to their educational, research, and mission three goals.
- Implement intellectual capital disclosure reports: Reinstate measurement models (such as the Leitner model) to prepare periodic reports disclosing intangible assets in universities to enhance transparency and attract funding.
- Modernize recruitment and training mechanisms: Adopt e-recruitment and technology-based continuous training programs to build research and teaching competencies that keep pace with global developments.
- Activate the universities' "mission three": Establish technology transfer centers and business incubators within universities to strengthen partnerships with the economic sector and local companies.
- Invest in technological infrastructure and collective intelligence: Adopt a collective intelligence approach (based on the Secondo model) to involve all internal and external stakeholders in decision-making and guide scientific research for the benefit of society.
- Develop an indicator system that covers the three dimensions of intellectual capital and is not limited to traditional financial indicators.
- Shifting from resource management to value management: The university should not focus solely on the number of professors, publications, or agreements, but rather on the value generated from these resources.

¹Karl-Heinz LEITNER *et al*, A Strategic Approach for Intellectual Capital Management in European Universities: Guidelines for Implementation, UEFISCDI Blueprint Series, 1st Edit, Bucharest, 2014, p.25.



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