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THE RELEVANCE OF INTELLECTUAL CAPITAL IN SMALL AND MEDIUM-SIZED ENTERPRISES

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ABSTRACT
Understanding the environment of small and medium-sized companies is indeed relevant, since they are considered a driver of economic and socio-environmental development, due to their ability to generate jobs. However, considering the strategic importance of small and medium-sized companies for the economy, society and governments, the challenge of understanding the peculiarities of the dimensions of Intellectual Capital in this environment is still something to be explored in depth. Thus, the present study is conducted to empirically examine the dimensions of use and value creation of Intellectual Capital in small and medium-sized companies and, simultaneously, provide a clear vision of the strategic role of Intellectual Capital in the effective management of knowledge assets. Through a quantitative approach, this research made use of an online survey as a method of treating the ambition, and the results show that all dimensions of Intellectual Capital have significant effects on the creation of value in small and medium-sized companies. However, it also reveals that the lack of investment capacity seems to be an obstacle to sustainability. The present study has a number of respondent limitations and future studies may not only be carried out in a larger sample, but also contemplate other aspects.

Keywords: Intellectual capital. Intellectual capital dimensions. Small and medium-sized enterprises.

A RELEVÂNCIA DO CAPITAL INTELECTUAL NAS PEQUENAS E MÉDIAS EMPRESAS

RESUMO
Entender o ambiente das pequenas e médias empresas é de fato relevante, uma vez que elas são consideradas um propulsor do desenvolvimento econômico e socioambiental, por sua capacidade de geração de empregos. Porém, considerando a importância estratégica das pequenas e médias empresas para a economia, sociedade e governos, o desafio de entender as peculiaridades das dimensões do Capital Intelectual neste ambiente ainda é algo a ser explorado em profundidade. Assim, o presente estudo é conduzido para examinar empiricamente as dimensões de uso e criação de valor do Capital Intelectual em pequenas e médias empresas e, simultaneamente, fornecer uma visão clara do papel estratégico do Capital Intelectual na gestão eficaz dos ativos de conhecimento. Através de uma abordagem quantitativa, esta pesquisa fez uso de uma pesquisa online como método de tratamento do ambicionado, e os resultados mostram que todas as dimensões do Capital Intelectual têm efeitos significativos na criação de valor das pequenas e médias empresas. No entanto, também revela que a falta de capacidade de investimento parece ser um entrave à sustentabilidade. O presente estudo tem uma série de limitações de respondentes e estudos futuros podem não apenas ser realizados em uma amostra maior, mas também contemplar outros aspectos.

Palavras-chave: Capital intelectual. Dimensões do capital intelectual. Pequenas e médias empresas.

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1 INTRODUCTION

The success of economic development in the past depended greatly on the use of tangible assets such as, among others, land, natural resources, and equipment, to be able to create added value to the well-being. Nevertheless, in the present era of information economics, the success of economic development depends on the ability to apply knowledge (Nuryaman, 2015). Notably, the value of physical and financial assets is disclosed periodically and can be easily found on the balance sheet and other company's financial records. In contrast, intangible assets such as the skills of the workforce and its organization are becoming increasingly important in determining the expected corporate profits and sustainability. However, these types of assets remain largely invisible to the external world (Sherif; Elsayed, 2016).

Mainly in the past two decades, academics, as well as corporate management, have put great effort into studying the importance of Intellectual Capital, due to the fact that it may be considered a driver of corporate performance, competitiveness, success, value creation, and financial sustainability (Bierly; Chakrabarti, 1996; Brennan; Connell, 2000; Bontis; Janosevic; Dzenopoljac, 2015; Bontis; Fitz-Enz, 2002; Cronje; Moolman, 2013; Kogut; Zander, 1992; Xu; Wang, 2018). However, even though few authors have devoted themselves to studying the influence of Intellectual Capital on small and medium-sized enterprises' value creation, previous studies (Yaacob *et al*., 2014) have demonstrated a strong correlation among those variables, which justifies the intent of the study.

In any country, but more especially in developing countries, small and medium-sized enterprises are well-thought-out to be engines of growth because of their contribution to economic growth, employment generation, and reduction of poverty (Ayyagari; Beck; Demirguc-Kunt, 2007). In fact, small and medium-sized enterprises are often flexible, creative (Konsti-Laakso; Pihkala; Kraus, 2012) and diligent in establishing, solidifying, and defending strategies for sustained competitive advantage. On the other hand, their difficulties in realizing gains of scale (Patel; Jayaram, 2014; Wales; Gupta; Mousa, 2013), may be the reason why failure rates remain high.

In this context, the purpose of the present study is to empirically examine the use and value creation of Intellectual Capital dimensions in small and

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medium-sized enterprises. It takes a broad analytical perspective on Intellectual Capital valuation by using an online survey, and it is based on a practical and relevant problem that aims to identify the important role of Intellectual Capital in creating value for small and medium-sized enterprises. Therefore, this research is justified by dedicating itself to contributing to academic and scientific progress, aiming at improving the understanding of the referred research problem through the relationship between scientific theory and empirical market practice.

At this moment, it is announced that Intellectual Capital is important for companies, with an emphasis on small and medium-sized enterprises, as it deals with intangible assets from the perspective of their valuation and value creation for the business. However, a question may arise in the mind of the reader of this article: what is the relationship of this theme to Information Science (IS)? After adopting Brookes' paradigm (1980a, 1980b), IS came to be understood as a social science, as it considers the trinity of individual-information-knowledge in society (Capurro, 2003).

Considering knowledge as a phenomenon intertwined with the individual who operates in small and medium-sized enterprises and shapes and is shaped by society, Intellectual Capital is related to IS as a theme that aims to value this asset in its structural, relational, and human dimensions (Corrêa, 2023). Thus, Intellectual Capital aligns with IS by considering the triad of intangible assets (knowledge and information) individual-company, directly associated with the aforementioned trinity, and both situated in the social context. After all, individuals, imbued with knowledge, operate in companies surrounded by information that influences the social-economic context of nations.

In light of the aforementioned relationship and the purpose of this investigation, this research unfolds in the following sequence of development. For its operationalization, this paper is subdivided into subsections. In addition to this introduction (subsection 1), the theoretical foundations (subsection 2) that support the discussion among Intellectual Capital value creation in small and medium-sized enterprises are presented. In sequence, the methodological procedures that describes the problem statement (subsection 3) are elucidated so that, subsequently, the analysis of the results (subsection 4) is evidenced by the methods outlined. Then, the final considerations (subsection

5) are made and the references used in the course of this investigation are listed.

2 THEORETICAL BACKGROUND

2.1 Intellectual Capital

The resource-based theory of the firm suggests that firms can be seen as a unique bundle of dynamic, complex, and intangible resources (Barney, 1991). This set of physical and intangible assets is at the core of the firm's competitive advantage (Grant, 1991). Aiming to contribute to a universal Intellectual Capital definition, Klein and Prusak (1994) defined it as the intellectual material that can be formalized, captured, and leveraged to produce a higher value asset. Years later, Edvinsson (1997) defined Intellectual Capital as the possession of knowledge, applied experience, organizational technology, customer relationships, and professional skills that provide a competitive edge in the market. Miller (1999) and Roos, Bainbridge and Jacobsen (2001) expanded this definition, including the organization's relationships and community influence.

Prior research suggests that three basic dimensions of Intellectual Capital (table 1) can be distinguished as human capital; structural capital; and relational capital (Bontis *et al*., 1999; Sveiby, 1997). That definition suggests that the management of knowledge creates Intellectual Capital (Kanchana; Mohan, 2017). In this context, human capital is typically recognized as a firm's most valuable asset as it underlies the organization's capability to make decisions and allocate resources. This enables human capital to become a source of innovation and strategic renewal (Bontis, 1998; Bozzolan; Favotto; Ricceri, 2003; Curado, 2008; Edvinsson; Malone, 1997).

Table 1 – Selected definitions on human, structural and relational capital

Dimension	Definition	Authors
Human Capital	knowledge, skills, learning capacity, experience and know-how of employees. Learning capacity, teamwork capacity, innovation capacity, know-how, experience, flexibility, motivation, satisfaction, loyalty, formal training, and education.	Ricceri (2008)
	Sum of employee's knowledge, competence, innovativeness, commitment and wisdom.	Morris (2015)
Structural Capital	Stock of knowledge that stays in the organization at the end of the day, after the employees go home. knowledge contained in documents, routines and organizational culture.	Curado (2008)

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Dimension	Definition	Authors
	Organizational capabilities, culture, processes, patents, copyrights, trademarks, databases, and so on.	Denicolai, Ramusino and Sotti (2015)
Relational Capital	Sum of all the relations which an organization develops through the course of conducting business with customers and different marketing channels.	Chang and Tseng (2005)
	Knowledge obtained through the establishment of relationships with external stakeholders.	Yu *et al*. (2015)

Source: authors (2021).

Regarding structural capital, it is commonly defined as being the capability of an organization to transform human capital knowledge into tangible assets such as software, databases, computer systems, routines, procedures, and strategies to create value for the organization (Bontis, 1998; Cikrikci; Dastan, 2002; Petty; Guthrie, 2000). At last, relational capital is considered to be an asset that resides in the social relationships and networks among individuals, communities, or society. Including brands, customers, customer loyalty, distribution channels, business alliances, joint research efforts, and licensing agreements (Bozzolan; Favotto; Ricceri, 2003; Leana; Buren, 1999; Tsai; Ghosal, 1998).

Despite the great effort applied by scholars and practitioners along the last two decades, no universal definition was achieved to address Intellectual Capital and its dimensions.

2.2 Intellectual Capital and small and medium-sized enterprises

Studies suggest that the modern economy is based on knowledge, knowledge-based assets, new strategies, and techniques for managing knowledge-based assets (Demediuk, 2002; Sullivan, 2000). In this context, the management of knowledge figures as a key resource for firm value creation (Bontis, 2001; Kanchana; Mohan, 2017; Sveiby, 2000; Sveiby, 2010;). Therefore, the sustainable growth of a company is grounded on establishing know-how and transforming it into capitalization (Wang, 2011).

It is common sense that small and medium-sized enterprises work in close contact with customers and suppliers, using a personal form of control and having a long-term view of business relations. Its success is considered to be associated with a clear focus and strong values like independence, flexibility, entrepreneurship, and innovation (Wolff; Pett, 2006). On the other hand, they

suffer from informal structures, insufficient resources, erratic decision-making, and poor administrative and accounting procedures.

As aforementioned, measuring and managing Intellectual Capital is indeed important to small and medium-sized enterprises, once it reveals hidden assets that can have a major impact on the profitability and even the core existence of the company in the future (Ngah; Hoo; Ibrahim, 2009; Xu; Li, 2019). It expresses, in addition to financial statements, the value and continuous benefit of managing intangible assets (Abhayawansa et al., 2019; Andrikopoulos, 2010; Derun, 2013; Dumay *et al*., 2020; Fincham; Roslender, 2003; Guthrie *et al*., 2012; La Torre *et al*., 2018; Mårtensson, 2009; Novas; Alves; Sousa, 2017; Tayles; Pike; Sofian, 2006; Velmurugan, 2010).

Taking into consideration the already exposed, this study endeavors a quest into a deeper comprehension of the use of Intellectual Capital dimensions by small and medium-sized enterprises. Additionally, the conduction of an online survey is the main objective of this study, which aims to obtain workforce opinion regarding the above mentioned.

3 METHODOLOGICAL PROCEDURES

The aforementioned characterize the value of Intellectual Capital as a representative for small and medium-sized enterprises' performance. Therefore, keeping the research objective in observance, the study proposes to investigate the use and value creation of Intellectual Capital in those organizations. Through a quantitative approach, this research made use of an online survey, that provides the ability to conduct large-scale data collection (Couper, 2000). All questions were directed to private small and medium-sized enterprises personnel.

During the twentieth century, there were great advances in the techniques and technologies utilized in survey research, from systematic sampling methods to enhanced questionnaire design and computerized data analysis. The field of survey research has become much more scientific (Evans; Mathur, 2005). As a result, more and more researchers are conducting online surveys. In order to reach the best possible results, the study used SurveyMonkey[i]. It provides a survey completion progress bar so that the total

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number of survey questionnaires completed can be easily tracked and read (Waclawski, 2012).

Additionally, the online survey was oriented according to the statistical theory which defined the sample size needed in relation to the observed population. The sample size was determined by the formula whose population is not known, nor the population distribution of these individuals (Triola, 1999).

$$n = \frac{Z_{\alpha/2}^{2} \cdot 0{,}25}{E^{2}}$$

Source: Triola (1999).

The Likert Scale was used to assist data collection and analysis of the sample. This scale is commonly used in opinion polls. In general, four or five ordinal categories are used in the Likert Scale (Vieira; Dalmoro, 2008). The scale is subdivided into five categories: 1 = strongly disagree; 2= disagree; 3 = neither agree nor disagree; 4 = agree; and 5 = strongly agree. Finally, the research intended to meet the needs aforementioned, aiming to identify and measure Intellectual Capital dimensions, their use, and value creation in different small and medium-sized enterprises, by employing descriptive statistics and correlation analysis. So, the online survey presented 22 questions. The first four questions quested to characterize the respondents and companies. The other 18 questions aimed to classify and subdivide the dimensions of Intellectual Capital as defined by Petrash (1996) and Sveiby (1997).

The Human Capital dimension highlighted the items that are related to the human being. The objective was to explain issues related to the development of skill levels in employees. Yet, in order to identify the Structural Capital dimension, the study sought to understand how much the organization is focused on defending its intellectual property rights, targeting at developing the quality of its products, and encouraging employees to continue to create innovative ideas. Ultimately, to measure the Relational Capital line, the questions focused on the organization's strategic procedures and indicated how much it is determined to involve customers in its processes (table 2).

Table 2 – Human, structural and relational capital value measure

Dimension	Question	Value added	Authors
Human Capital (HC)	The organization depends entirely on the experience and skill of the employees in carrying out their work.	Dependence on human skills	Bozzolan, Favotto and Ricceri (2003); Colombo and Grilli (2005); Ricceri (2008); Unger *et al.* (2011); Rodrigues (2014); Morris (2015); Staniewski (2016); McDowell *et al.* (2018); Hartati and Hadiwidjaja (2019).
	The organization has great confidence in the performance of its employees in relation to alignment with its business.	Strategic adherence	
	Employees have a high level of developed skills.	Employee autonomy	
	Vacancies in work teams are filled by experienced and qualified employees.	Employee skills	
	The organization stresses that the continuous efforts to qualify and develop employees would be dedicated to those who offer better performance and would not be applied to those with inferior performance.	Employee incentive programs	
	The organization is struggling to provide workers with skills and practices with intensive training programs.	Adherence to development of skills	
Structural Capital (SC)	The organization pays due attention to reducing rework in carrying out activities.	Adherence to the quality process	Stewart (1997); Petty and Guthrie (2000); Curado (2008); Bozzolan, Favotto and Ricceri, (2003); Denicolai, Ramusino and Sotti (2015); Jinini, Dahiyat and Bontis (2019).
	The processes are to guarantee the quality of products easily accessible and understood by the entire organization.	Customer focus	
	The organization is concerned with its trademark and pays special attention to disseminating this concern both internally and to customers.	Assimilation of brand value	
	The internal and external communication system is efficient and provides the necessary information to those who are due at the moment.	Adherence to communication management	
	The organization invests in the acquisition of systems that aim to improve the processing and publication of information.	Adherence to innovation management	
	Internal processes are supporting and leverage innovation.	Adherence to research and innovation	
Relational Capital (RC)	The organization operates with its full potential at full capacity to satisfy customers.	R&D processes aimed at technology transfer	Sveiby (1997); Bozzolan, Favotto and Ricceri (2003); Chang and Tseng (2005); Yu; Wang; Chang (2015); Kanchana and Mohan (2017).
	The organization conducts dialogues with customers, to identify their needs and desires, sometimes not even of their own knowledge.	Co-design processes in partnership with customers	
	The organization intensively works with the exchange of information	Co-design processes	

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Dimension	Question	Value added	Authors
	that contributes to the opening of new horizons for mutual cooperation with customers.	with suppliers	
	The organization seeks to reduce problems, offering solutions to customers.	Complaints management processes developed	
	The organization is seeking the participation of customers in its operations, in order to find development opportunities.	Knowledge development processes in partnerships	
	The organization has programs to increase the customer portfolio in the short/medium term.	Development initiatives for market gain	

Source: authors (2021).

The four initial questions, classify respondents according to the market segment in which the company operates, the area in which respondents work, their positions in the company, and the number of employees in the organization.

4 RESULTS AND DISCUSSION

The online survey was completed by a total of 183 participants from privately-owned Small and Medium-sized Enterprises (SMEs). The poll mainly focused on individuals who held positions as owners, managers, or employees in administrative departments. Empirical results of the study are presented in three parts, namely characterization of respondents (table 3), descriptive statistics (table 4), and correlation results (table 5), as follows. A margin of error of 8% was considered, for the convenience of the study, with a 95% confidence interval for the mean, which required a sample greater than 150 respondents.

Table 3 – Characterization of respondents in small and medium-sized enterprises

Variables	Categories	Respondents	%
Sector	Industry	22	12%
	Commerce	49	27%
	Service	112	61%
Area	Administrative and Human resources	13	7%
	Sales and marketing	22	12%
	Finance and purchasing	9	5%
	Operations and logistics	11	6%
	Company board	86	47%
	Other	42	23%
Position	Shareholder	95	52%
	Manager	37	20%
	Coordinator	11	6%
	Analyst	18	10%
	Assistant	22	12%
Number of employees	1 to 10	95	52%

Variables	Categories	Respondents	%
	11 to 20	15	8%
	21 to 30	9	5%
	31 to 40	9	5%
	Above 40	55	30%
Total		183	100%

Source: authors (2021).

By analyzing table 1, service companies are predominant among the others (61%). The majority of respondents are shareholders (52%) and work as company directors (47%). There is also an important number of managers that answered the questionnaire (20%). Ninety-five respondents (52%) work for enterprises that operate with a workforce of ten or fewer employees. On the other hand, fifty-five respondents (30%) work for enterprises that operate with a workforce of over 40 employees.

The descriptive statistics (table 4) findings, retrieved from all the answers to the 18 survey questions, enable us to put forward some preliminary arguments about the use and value creation of Intellectual Capital in small and medium-sized enterprises.

Table 4 – Descriptive statistics of Intellectual Capital dimension value creation

Dimension	n	Minimum	Maximum	Median	Variance	Std. Deviation
HC	6	0.58	0.83	0.74	0.0096	0.0978
SC	6	0.68	0.81	0.74	0.0021	0.0461
RC	6	0.66	0.83	0.77	0.0040	0.0633

Source: authors (2021).

Results show a strong dependence on human skills by the small and medium-sized enterprises (83%). Human capital, regarded as "skills" or "know-how", is well supported by prior studies (Colombo; Grilli, 2005; Staniewski, 2016; Unger *et al*., 2011). In addition, human capital contributes to maintaining and enhancing the profitability of small and medium-sized enterprises (McDowell *et al*., 2018). However, a fragility on employee incentive programs (58%) is observed by this and by other studies (Hartati; Hadiwidjaja, 2019), in contrast to the need for those employees' skills. Investment readiness in human resources seems to be the issue here.

Structural capital dimension achievements show that the respondents are concerned with the company's trademark and pay special attention to disseminating this concern both internally and to customers (81%). On the other hand, a lack of investments in the acquisition of systems to manage innovation

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(68%) shows that the ability to innovate may be a challenge to small and medium-sized enterprises. Jinini, Dahiyat and Bontis (2019) noted that entrepreneurial orientation had a particularly strong effect on the relationship between structural capital and technical innovation, and suggests that organizational knowledge needs to be connected with prevailing market needs in order to support an organization's innovation endeavors. Which seems to corroborate the study findings.

As mentioned by Xu and Li (2019), relational capital was the least influential contributor to small and medium-sized enterprises' performance. Table 4 shows that the small and medium-sized enterprises studied are concerned about offering solutions to customers and reducing problems (83%). On the contrary, the development of opportunities via customers' participation in its operations (66%), may demonstrate one of the strong small and medium-sized enterprises' weak points.

The correlation analysis shows that human capital, structural capital, and relational capital are positively correlated (table 5).

Table 5 – Dimension value creation correlation analysis

	HC	SC	RC
HC	1.00		
SC	0.70*	1.00	
RC	0.78*	0.48*	1.00

Source: authors (2021).
Here, * denotes significance at 5% level.

Firstly, findings suggest that the Intellectual Capital dimensions adhere to small and medium-sized enterprises in a positive way. Indicating that the use of Intellectual Capital dimensions may positively enhance value creation in small and medium-sized enterprises. The relationship among all variables is considered high and significant. Especially the one between human capital and relational capital. The result indicates that efficient and effective use of Intellectual Capital dimensions will lead small and medium-sized enterprises to achieve higher value creation. The results are corroborated by the previous findings obtained by other researchers (Maji; Goswami, 2016; Venugopal; Subha, 2015).

Despite the seminal efforts of Klein and Prusak (1994), Edvinsson (1997), Miller (1999), and Roos; Bainbridge; Jacobsen (2001), as well as Sveiby (1997,

2000, 2010), it is noteworthy that no universal definition of Intellectual Capital has been achieved. However, the dimensions analyzed (Table 1), while not definitive either, do indicate a positive relationship in the context of small and medium-sized enterprises, highlighting that they serve as foundational pillars for further research in this theme within this context.

5 FINAL CONSIDERATIONS

In the knowledge economy, Intellectual Capital is considered an important strategic asset to large as well as small companies. Researchers have long argued that Intellectual Capital is a critical factor in firm performance, particularly for small and medium-sized enterprises. This research was guided by the intent to identify determining factors for achieving a basic structure for the field of Intellectual Capital and empirically examine the use and value creation of Intellectual Capital on small and medium-sized enterprises, by using an online survey.

The results of the online survey, in which the aim was to obtain important information on the characteristics and/or opinions of small and medium-sized enterprises' personnel, related to the use and value creation of the Intellectual Capital components. Empirical findings show that human capital is the key element to maintain and enhance the profitability of small and medium-sized enterprises, however, the lack of investment readiness in human resources seems to be a threat to value creation.

Regarding structural capital, the findings describe a trademark concern but also reveal a lack of system acquisition and processes supporting innovation, showing that the ability to innovate is certainly a challenge to small and medium-sized enterprises. Concerning relational capital, enterprises are aware of the need to offer solutions to customers and reduce problems. On the other hand, the answers reveal a fragility in customers' participation in companies' operations.

Under the scientific aegis, it is noteworthy that the reports of this research, as well as its conclusions, not only aim to identify the drivers to value creation in the analyzed sample but indeed, to announce limitations that small and medium-sized enterprises face while conducting the use of Intellectual Capital. The current study has respondent size limitations and future studies may

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not only be performed on a larger sample but also contemplate the social and environmental aspects of Intellectual Capital.

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[i] **FINAL NOTES**
SurveyMonkey is a website that enables the researcher to develop and direct the survey to respondents through the internet. It can be found at: https://www.surveymonkey.com