

# Boosting intellectual capital and digital maturity of SMEs: an investigation of enterprises in an Italian Southern tourist district

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## Abstract

**Purpose** – This paper offers an introduction and sets the stage for the theme issue. It describes the methodology used and highlights the articles that address the strategic question of how hospitality and tourism industries can minimize the effects of labor shortages by embracing advanced technologies.

**Design/methodology/approach** – This special issue explores the potential of automation, artificial intelligence, robotics and advanced data analytics in mitigating staff shortages. Automation streamlines operations, AI enhances customer interactions, robotics reimagines service delivery and data analytics informs strategic decisions. The study addresses a strategic question by combining literature reviews, data analysis, expert insights from practitioners and practical solution recommendations.

**Findings** – The theme issue presents research that explores how advanced technologies can be effectively utilized to mitigate labor shortages in the hospitality and tourism industries. Automation streamlines operations, AI enhances customer interactions, robotics reimagines service delivery and data analytics informs strategic decisions. However, successful integration of technology requires careful planning, training and ongoing maintenance to ensure a balance between technology and human interaction. By embracing these technologies, businesses can better cope with staffing deficits and position themselves for long-term success in a rapidly evolving environment.

**Originality/value** – This special issue explores the ways in which advanced technologies, such as automation, artificial intelligence and robotics, can be leveraged to alleviate the labor shortage crisis faced by the hospitality and tourism industries worldwide. From developed to developing countries, these industries are grappling with severe labor shortages, particularly in terms of skilled workers. The articles presented in this issue offer valuable insights and strategies for addressing this pressing issue.

**Keywords** Digital maturity, Digitization, Tourist district, Intellectual capital, Hospitality and tourism industries

**Paper type** General review

## 1. Introduction

The rise of the digital economy and digital technologies have led to significant organizational transformations, requiring businesses to adapt dynamically to maintain competitiveness.

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This shift has brought intellectual capital—comprising intangible and knowledge-based resources—to the forefront as a critical factor for business success (Li *et al.*, 2023; Del Giudice *et al.*, 2023). Since its introduction by Galbraith (1969), intellectual capital has been recognized for impacting on performance, competitiveness, and innovation (Porter and Millar, 1985; Kogut and Zander, 1996; Davenport, 1999; Yuliana *et al.*, 2019).

Intellectual capital is closely linked to innovation capability (Bontis, 1998; Subramaniam and Youndt, 2005), organizational commitment (Zlatković, 2018; Del Giudice *et al.*, 2021), and knowledge management (Lerro *et al.*, 2012; Wu and Sivalogathan, 2013; Chen *et al.*, 2012; Irawan *et al.*, 2019). The interaction between intellectual capital, organizational learning, and digital transformation is particularly impactful for SMEs, enhancing performance (Ganawati *et al.*, 2021; Scuotto *et al.*, 2021). The relationship between intellectual capital and digital transition, including the development of digital skills and knowledge, is complex, with strong intellectual capital fostering proactive digital adoption and vice versa (Bontis, 1998; Pokrovskaia *et al.*, 2021).

Understanding the relationship between intellectual capital and digital maturity is crucial for companies seeking to stay competitive in the digital era. This study, focusing on companies within the Amalfi Coast Tourist District, explores this connection, aiming to answer whether there is a relationship between intellectual capital and digital maturity (Chu *et al.*, 2011; Ahmed *et al.*, 2020; Campos *et al.*, 2020). The study seeks to provide insights into how these factors influence business performance and suggests new research directions.

The paper is structured as follows: Section 2 reviews the literature on intellectual capital and digital maturity; Section 2.1 presents the research hypotheses and model. Section 3 outlines the methodology, combining qualitative focus groups and quantitative surveys conducted with 94 companies in the Amalfi Coast Tourist District. The results are discussed in Section 4, followed by the study's implications in Section 5. Finally, Section 6 highlights limitations and concludes the study.

## 2. Literature review and hypotheses development

### 2.1 The strategic value of intellectual capital in the digital era

The literature highlights the strong interconnection between digital transformation, digital maturity, and the strategic value of intellectual capital in enabling organizations to adapt and evolve in the digital era (Kane *et al.*, 2015; Nambisan *et al.*, 2019; Pirogova and Plotnikov, 2020; Ritala *et al.*, 2021; Chernenko *et al.*, 2021).

Research on the impact of intellectual capital on the digitization of service companies, especially SMEs in the Amalfi Coast Tourist District, forms the basis of this study. Intellectual capital, an intangible resource that influences company performance, is increasingly recognized as vital for creating value in the business system (Bontis, 1998; Hayton, 2005; Guthrie and Dumay, 2015; Dumay and Garanina, 2013; Garanina and Dumay, 2017; Panno, 2011). Intellectual capital is typically categorized into human, structural, and relational capital, each playing a critical role in organizational success (Pike and Ross, 2004; Ross *et al.*, 2007; Roos and Pike, 2018; Paternostro, 2009).

The relevance of intellectual capital is further underscored by its contribution to sustainable value creation, as recognized in corporate reporting and sustainability analyses (Hristov *et al.*, 2020). Strategic management of intellectual capital is crucial for companies to adapt to technological advancements and market dynamics, enabling long-term success and growth (Pappas *et al.*, 2023). Intellectual capital is characterized by its development on existing forms of capital, accumulation of skills, and its role in driving innovation and competitiveness (Felice, 2015; Shaik *et al.*, 2023). The management of intellectual capital is essential for achieving strategic objectives and navigating the complexities of the modern business environment.

Thus, intellectual capital is fundamental for creating a competitive advantage, particularly through its influence on innovation and management style (Koch *et al.*, 2002; Bornemann and Wiedenhofer, 2014).

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## 2.2 Intellectual capital, leadership and management style

Studies have established a correlation between intellectual capital, digital maturity, and management style, emphasizing the need for further research into how these dynamics affect an organization's ability to adapt and thrive in a rapidly changing environment (Švarc *et al.*, 2021; Bharadwaj *et al.*, 2013). The concept of organizational ambidexterity, which balances exploiting current technologies with exploring new digital advances, is crucial for maintaining competitiveness in the digital era (Tushman and O'Reilly, 2002; O'Reilly III and Tushman, 2008; Liao and Zhang, 2022). This strategic approach is crucial for organizations to move more effectively through increased digitalization in the complexities of the digital landscape and remain competitive (Reese, 2019; Wang *et al.*, 2021). Effective leadership and management practices are fundamental to addressing digital transformation, with strategic and proactive management approaches positively linked to higher levels of digital maturity (Westerman *et al.*, 2014; Henderikx and Stoffers, 2022; Aragón-Correa *et al.*, 2008; Bonanomi *et al.*, 2019; Garcia *et al.*, 2018; Smith *et al.*, 2020; Nasiri *et al.*, 2022).

Digital maturity includes various dimensions, such as leadership, organizational readiness, and the alignment of digital strategies with business models (Porfírio *et al.*, 2021; Halpern *et al.*, 2021; Salume *et al.*, 2021). This underscores the importance of how organizations strategically manage their resources and capabilities to adapt to digital transformation (Kane *et al.*, 2015; Li *et al.*, 2017; Warner and Wäger, 2019). Understanding these dimensions and aligning digital transformation strategies with organizational objectives is relevant for successfully navigating the digital economy (Quinton *et al.*, 2017; Cao *et al.*, 2023). Strategic and proactive management involves leadership that is forward-looking, with a commitment to continuous innovation and adaptation to new technologies (Williams *et al.*, 2024; Broccardo *et al.*, 2024).

A proactive and strategic management approach influences digital maturity by defining a clear vision for digital integration, fostering a culture of innovation, positioning business processes with digital opportunities, and developing necessary digital skills through strategic human resource management (Waugh and Streib, 2006; Hortovanyi *et al.*, 2023; Escoz Barragan *et al.*, 2024; Malodia *et al.*, 2023; Singh *et al.*, 2023; Christofi *et al.*, 2023; Joel *et al.*, 2024; Alsharari, 2024; Popoola *et al.*, 2024; Orieno *et al.*, 2024; Gadzali *et al.*, 2023; Pingali *et al.*, 2023). Such management also enhances organizational agility, enabling rapid responses to digital shifts and emerging opportunities. The interconnection between leadership, organizational culture, and digital outcomes stresses the importance of focusing on these aspects to shape the digital success of companies (Leso *et al.*, 2023; Truong *et al.*, 2024; Balconi and Fronda, 2020).

## 2.3 Intellectual capital and digital maturity

The literature underscores that digital transformation compels companies to navigate radical changes and uncertainties, necessitating a new understanding of leadership at all management levels (Zhang and Chen, 2023; Henderikx and Stoffers, 2022). Digital transformation impacts both formal and informal organizational structures, highlighting the importance of leadership styles in driving successful organizational change (Bonanomi *et al.*, 2019; Nambisan *et al.*, 2019; Türk, 2023). Digital transformation involves the comprehensive use of digital technologies to renew processes, services, and business models to enhance performance and meet customer needs in a competitive environment (Li *et al.*, 2023; Zhang *et al.*, 2023; Joel *et al.*, 2024).

Digital maturity, on the other hand, reflects an organization's competence in managing and leveraging digital technologies to gain a competitive advantage. It involves having a solid digital infrastructure, optimized processes, skilled employees, and a culture favorable to digital innovation (Senna *et al.*, 2023; Perera *et al.*, 2023). While digital transformation represents the "what," digital maturity represents the "how" of successfully implementing these changes (Aras and Büyükközkın, 2023; Leso *et al.*, 2024). Both are critical for long-term success in the dynamic digital business environment (Schwertner, 2017; Kraus *et al.*, 2022).

Traditional management practices, focused on hierarchy and control, may need substantial revision to address the challenges posed by the digital landscape (Mukhorava *et al.*, 2020;

Mizanbekova *et al.*, 2020; Martincevic, 2022). In this regard, numerous authors have emphasized the importance of adapting leadership styles to the new digital era (Westerman *et al.*, 2014a) and the central connection of intellectual capital with digital technologies, highlighting the necessary integration of digital innovations with intellectual capital (Table 1) (Wang *et al.*, 2017; Manuylenko *et al.*, 2022).

#### 2.4 Research hypotheses

In this study, intellectual capital is analyzed through three components: structural capital (including managerial style, organizational culture, procedures, and leadership), human capital (focusing on decision-making skills), and relational capital (covering the company's external relationships) (Pike and Ross, 2004; Ross *et al.*, 2007; Roos and Pike, 2018; Paternostro, 2009). Based on the literature and the context of the Amalfi Coast Tourist District, several research hypotheses were developed. The literature indicates that managerial style is critical in promoting the adoption of digital technologies within organizations. Managers who embrace change and innovation tend to foster environments that support the effective use of digital technologies, which is particularly important in SMEs where leadership strongly influences organizational culture and resource allocation. Therefore, it is hypothesized that a digitally-oriented managerial style positively impacts the digital maturity of companies (Dorozalla and Klus, 2019; Alma Çalli *et al.*, 2022).

H1. Managerial style positively influences the digital maturity of SMEs.

**Table 1.** Relationship between elements of intellectual capital and digitalization elements

	Elements of intellectual capital	Digitalization elements	
Human	Knowledge	Knowledge and skills of using specialized software	
	Skills		
	Experience and length of service		Willingness to master and use in the work of new types of software and new devices that increase the level of digitalization
	Creative skills		
	Moral values		
	Culture of Labor and Organizational Relations		
Organizational	Physical and Mental Health	Hardware and software Databases providing operational activities	
	Hardware and software		
	Database		Organizational forms and structures, standards, norms, regulations, focused on the use of digital solutions
	Patents		
	Trademarks		A corporate culture that incorporates the use of digital solutions
	Organizational structure		
Organization culture			
Relational	Organizational standards, norms, regulations	Customer databases Own Internet solutions, customer interaction platforms Databases about suppliers Means of digital communication with Stakeholders (advertising, public relations)etc.	
	Partner Relations		
	Customer Relations		
	Customer Information		
	Customer Relationship History		
	Trademark (brand)		

**Source(s):** Authors' work. Authors' elaboration based on Pirogova, Plotnikov (2020)

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Adequate decision-making competences are crucial for successfully managing the implementation and use of digital technologies in SMEs. The literature emphasizes that informed and timely decisions are key to enhancing a company's digital maturity. These competences, as part of human capital, can be examined from both strategic and operational perspectives. Strategically, high decision-making competences enable SMEs to identify and invest in suitable digital solutions while effectively managing the challenges and opportunities of digital transformation (Messina, 2018; Felicetti *et al.*, 2023). Operationally, digital technologies allow companies to collect and analyze real-time data, leading to better-informed decisions and improved operational efficiency (Hoßfeld, 2017). From such a perspective, a further two research hypotheses can be developed as follows:

*H2.1.* Strategic decision-making competences positively influence the digital maturity of SMEs.

*H2.2.* Operational decision-making competences are positively influenced by the digital maturity of SMEs.

Carrying on the last component of intellectual capital, and namely relational capital, SMEs that are part of networks or collaborations with other companies or entities can benefit from an environment richer in resources, knowledge, and opportunities for mutual learning. The literature has highlighted that ties with other actors can facilitate the exchange of knowledge and practices related to digital transformation, thereby contributing to the digital maturity of SMEs (Belz *et al.*, 2019; Ellerani, 2020; Choi, Hyun, 2022). Therefore, the following research hypothesis can be postulated:

*H3.* The network in which SMEs are embedded positively influences their digital maturity.

Finally, intellectual capital, which includes knowledge, skills, and relationships within the company, is crucial for fully harnessing the potential of digital technologies. Studies have shown that SMEs investing in intellectual capital are better able to adapt to digital transformation and derive greater benefits from it. Considering the key role of intellectual capital in generating and utilizing digital innovation, it is reasonable to hypothesize that a high level of intellectual capital can positively influence the digital maturity of SMEs (Ganawati *et al.*, 2021; Yilmaz and Tuzlukaya, 2024). Consequently, taking into consideration all the components of the intellectual capital, a fourth research hypothesis can be developed:

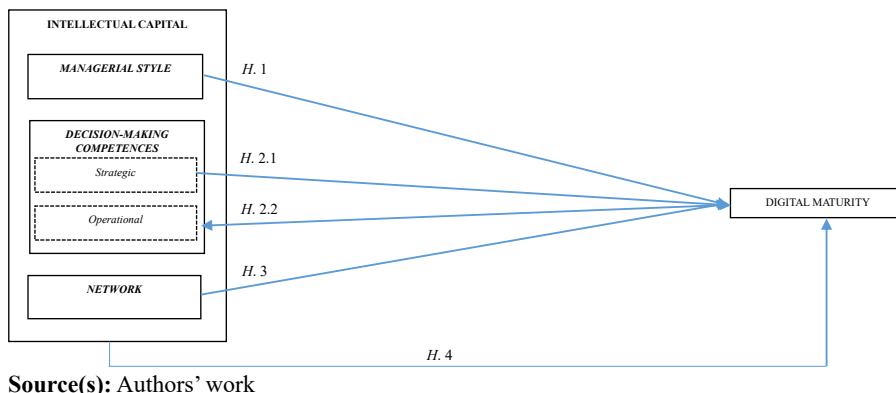
*H4.* Intellectual capital positively influences the digital maturity of SMEs.

A conceptual model has been constructed, considering the hypotheses mentioned above. The model illustrates the relationships investigated, (Figure 1).

### 3. Methodology

The study aims to evaluate how intellectual capital (Chierici *et al.*, 2020) influences the digital maturity of businesses. The research, guided by hypotheses developed through an in-depth literature review, used a qualitative-quantitative approach structured in two phases. The study explores the value of intellectual capital, including management style, decision-making competences, and networking, in enhancing the digital maturity of SMEs.

The concept of intellectual capital arose to explain value creation and company growth beyond financial metrics, addressing gaps in traditional value concepts (Madinios *et al.*, 2011). The first phase of the research used focus groups with 12 managers and entrepreneurs from the Italian Amalfi Coast Tourist District, a hybrid public-private entity established to promote sustainable tourism and improve residents' quality of life. The focus group aimed to explore the application of digital maturity in SMEs, generating reliable and detailed empirical evidence (Cameron, 2005; Morgan, 1996; Greenbaum, 1998; Calderon *et al.*, 2000).



Source(s): Authors' work

Figure 1. The research model

Insights from the focus group informed the second, quantitative phase, which analyzed the relationship between intellectual capital and digital maturity in SMEs. A survey was conducted with 94 firms within the Amalfi Coast Tourist District, and 76 valid responses were analyzed. The district's model, characterized by knowledge circulation through spatial proximity and shared cultural values, supports innovation, including digital innovation (Muscio, 2006; Hoyt and Gopal-Agge, 2007). The study employed logistic regression to test the hypotheses, using the logit model to understand the effect of independent variables on the probability of binary outcomes (Demaris, 1992).

This methodological approach provides a comprehensive understanding of digitalization levels and managerial resources within the district, aligning with the integrated reporting framework (Abeysekera, 2013).

## 4. Results and discussion

### 4.1 Main implications from the focus group

The research hypotheses, derived from a thorough literature review, were tested using a qualitative-quantitative approach. Intellectual capital, essential for understanding value creation and company growth beyond financial metrics (Madininos *et al.*, 2011), was examined in the context of SMEs in the Amalfi Coast Tourist District. The study's first phase utilized a focus group with 12 managers and entrepreneurs from the District, which is a hybrid public-private entity created to promote sustainable growth and innovation in tourism. The focus group aimed to explore the application of digital maturity in SMEs, employing principles of participant homogeneity and heterogeneity to generate rich empirical data (Cameron, 2005; Morgan, 1996; Greenbaum, 1998; Calderon *et al.*, 2000). The insights gained formed the basis for the second, quantitative phase. In this phase, data were collected through a survey distributed to all 94 firms operating within the district, with 76 valid responses used for analysis. The district model, characterized by knowledge circulation through spatial proximity and shared cultural values, supports innovation and digital transformation (Muscio, 2006; Hoyt and Gopal-Agge, 2007). Logistic regression, a common method for analyzing binary outcomes (Demaris, 1992), was used to test the hypotheses, providing a detailed understanding of digitalization and managerial resources in the district, aligned with the integrated reporting framework (Abeysekera, 2013).

### 4.2 Results of the logistic regression and discussion

The sample of companies belonging to the Amalfi Coast Tourist District – composed of 94 firms (76 valid responses) – has been described in Table 2, with reference to the core business,

**Table 2.** Characteristics of the sample

Operators	%	Tools	%	Enabling technologies	%
Serviced and not serviced accommodation	63.2	Website	93	Cloud	56.1
Travel agency, tour operator and booking services	15.8	Social media	Facebook 90 Instagram 86	Big data and analytics	37.2
Catering	10.5	Email	90.7	–	–
Other tourist activities	10.5	WhatsApp Business	65.1	Virtual reality	16.3*
		Messaging systems	52.1	Electronic data interchange	39.5*
		CRM	18.6	Information systems	27.9*

\* only interest

**Source(s):** Authors' work

the main electronic tools applied and the enabling technologies for digital transition, already applied or taken into consideration for a forthcoming implementation.

Continuing the analysis with the validation of the research hypotheses, the following emerges.

The first component of Intellectual Capital investigated by means of a binary logistic regression model is that of Human Capital. To study its impact on digital maturity (dependent variable), companies' managerial style has been observed, divided into data-driven management style, authoritarian management style and consultative management style (independent variables), as in [Table 3](#).

As suggested by data, data-driven management style ( $p$ -value 0.0064) has a significant effect digital maturity, that is expressed by number and type of enabling technologies. On the contrary, an authoritarian management style ( $p$ -value 0.1878, greater than the significance level of 0.05) seems not have a significant effect on digital maturity. Finally, participative/consultative management style ( $p$ -value 0.0135) has a significant effect on digital maturity. The study suggests that firms leveraging data analytics for informed decision-making progress along the "spectrum" of digital maturity by proactively adopting and adapting to digital technologies. This progression is not merely about having the latest tools but effectively using them to drive innovation, efficiency, and growth, particularly impacting governance.

**Table 3.** Impact of managerial style on digital maturity of SMEs

	Coef.	Std. error	Z	p-value	
Data-driven management style	0.761407	0.382312	1.992	0.0064	***
Authoritarian management style	0.14255	0.867378	-1.317	0.1878	
Consultative management style	0.447101	0.274590	1.628	0.0135	**

Average dependent variable	1.342105	SQM dependent variable	0.477567
Log-likelihood	-43.87450	Akaike Criterion	95.74899
Schwarz Criterion	105.0719	Hannan-Quinn	99.47489

**Note(s):** Dependent variable: Digital Maturity

Standard errors based on Hessian matrix

Number of cases "predicted correctly" = 51 (67.3%)

f(beta'x) in the average of the independent variables = 0.488

**Source(s):** Authors' work

A consultative management style, which involves employees in decision-making, fosters a participative culture, enhancing flexibility, adaptability, and innovation in the digital landscape. In contrast, an authoritarian management style, characterized by strong authority and control, may hinder digital maturity due to several factors:

**Skill Diversity:** Authoritarian leadership may not align with the digital skills required today.

**Resistance to Change:** This style often favors established practices, resisting new digital tools or processes.

**Generational Differences:** Older managers with authoritarian tendencies may lack the digital skills necessary for effective technology adoption.

**Organizational Culture:** An authoritarian culture may not promote a technology-oriented environment, limiting digital integration. The findings support the hypothesis that a consultative, data-driven management style positively influences the digital maturity of SMEs, emphasizing the importance of a participative, collaboration-oriented organizational culture in supporting digital transformation.

The study investigates the impact of Structural Capital on digital maturity using a binary logistic regression model, focusing on decision-making competency as a key factor for organizational success. Decision-making competency is divided into two components: strategic and operational. Strategic decision-making competency involves the ability to make decisions that shape the organization's direction, strategy, and long-term objectives. The study examines variables like research and development for innovation and information systems that support strategic decision-making. Operational decision-making competency focuses on the practical implementation of strategic decisions in daily operations. This includes the use of technological tools in areas such as digital marketing, sales and supply chain management, and financial management.

Together, these competencies are crucial for an organization's success. Strategic competency provides long-term vision, while operational competency ensures effective execution in daily activities. Their combination allows organizations to adapt quickly to changes, capitalize on opportunities, and achieve high performance.

The study of the analysis of strategic decision-making competency on digital maturity of SMEs is summarized in [Table 4](#).

As shown, research and development ( $p$ -value of 0.00891) has a significant impact on digital maturity, with a very low probability that the observed effect is due to chance. This

**Table 4.** Impact of strategic decision-making competency on digital maturity of SMEs

	Coef	Std. error	Z	$p$ -value	
Research and development	0.780623	0.429516	1.817	0.00891	**
Information systems	1.20994	0.632847	1.912	0.00959	**

Average dependent variable	0.342105	SQM dependent variable	0.477567
Log-likelihood	-49.56036	Akaike Criterion	105.1207
Schwarz Criterion	112.1129	Hannan-Quinn	107.9151

**Note(s):** Dependent variable: Digital Maturity  
 Standard errors based on Hessian matrix  
 Number of cases "predicted correctly" = 49 (64.5%)  
 $f(\beta \cdot x)$  in the average of the independent variables = 0.478

**Source(s):** Authors' work



suggests that an increase in strategic decision-making competency related to research and development is associated with an increase in digital maturity. Also the variable identified with information systems (with a positive coefficient of 1.20994 and a  $p$ -value of 0.00959) shows a significant impact on digital maturity, with a low probability that the observed effect is random. This suggests that an increase in strategic decision-making competency related to information systems is associated with a further increase in digital maturity. These results imply that greater strategic decision-making competency in key areas contributes in a determinant manner to plan a proper digital strategy.

With reference to the operational decision-making competency, the study supposes a reverse effect of digital maturity on functional requirements/activities. Therefore, key practical activities related to accounting and finance, marketing and logistics have been individually observed (Tables 5–8).

According to the data, a positive (coefficient 0.810930) and statistical significant ( $p$ -value 0.0238) association suggests that there is a positive effect of digital maturity on operational decision-making competence in the area of accounting and finance.

Data suggest a positive (coefficient 1.20397) and significant ( $p$ -value 0.0097) association between digital maturity and operational decision-making competence in marketing activities.

Also data relative to the impact of digital maturity on operational decision-making competence in logistic activities suggest a positive association (coefficient 1.70475), very high in terms of statistical significance ( $p$ -value 0.0017).

**Table 5.** Impact of digital maturity of SMEs on accounting and finance operations

	Coef.	Std.error	Z	p-value	
Digital maturity	0.810930	0.424918	1.908	0.0238	**
Average dependent variable	0.763158		SQM dependent variable	0.427970	
Log-likelihood	-50.70565		Akaike Criterion	103.4113	
Schwarz Criterion	105.7420		Hannan-Quinn	104.3428	

**Note(s):** Dependent variable: Accounting and Finance operations  
Standard errors based on Hessian matrix  
Number of cases “predicted correctly” = 48 (63.15%)  
 $f(\text{beta}'x)$  in the average of the independent variables = 0.428  
**Source(s):** Authors’ work

**Table 6.** Impact of digital maturity of SMEs on marketing operations

	Coef	Std.error	Z	p-value	
Digital maturity	1.20397	0.465475	2.587	0.0097	***
Average dependent variable	0.723684		SQM dependent variable	0.450146	
Log-likelihood	-48.70267		Akaike Criterion	99.40533	
Schwarz Criterion	101.7361		Hannan-Quinn	100.3368	

**Note(s):** Dependent variable: Marketing operations  
Standard errors based on Hessian matrix  
Number of cases “predicted correctly” = 55 (72.4%) 3  
 $f(\text{beta}'x)$  in the average of the independent variables = 0.450  
**Source(s):** Authors’ work

**Table 7.** Impact of digital maturity of SMEs on logistic operations

	Coef.	Std.error	Z	p-value	
Digital maturity	1.70475	0.543557	3.136	0.0017	***
Average dependent variable	0.723684		SQM dependent variable	0.450146	
Log-likelihood	-45.81976		Akaike Criterion	93.63952	
Schwarz Criterion	95.97025		Hannan-Quinn	94.57099	

**Note(s):** Dependent variable: Logistic operations  
Standard errors based on Hessian matrix  
Number of cases "predicted correctly" = 59 (77.6%)  
 $f(\beta \cdot x)$  in the average of the independent variables = 0.450

**Source(s):** Authors' work

**Table 8.** Impact of digital maturity of SMEs on sales operations

	Coef	Std.error	Z	p-value	
Digital maturity	0.470004	0.403113	1.166	0.2436	
Average dependent variable	0.539474		SQM dependent variable	0.501751	
Uncentered R-squared	0.008800		Uncentered R-squared	-0.649960	
Log-likelihood	-51.98060		Akaike Criterion	105.9612	
Schwarz Criterion	108.2919		Hannan-Quinn	106.8927	

**Note(s):** Dependent variable: Sales operations  
Standard errors based on Hessian matrix  
Number of cases "predicted correctly" = 41 (53.9%)  
 $f(\beta \cdot x)$  in the average of the independent variables = 0.502

**Source(s):** Authors' work

Finally, data showing the relation between digital maturity and sales operations show a positive effect (coefficient 0.470004) of digital maturity on operational decision-making competence in sales. However, the high  $p$ -value (0.2436) indicates lack of statistical significance. The likelihood ratio test confirms the lack of significance. The  $z$ -value is 1.166, indicating that the coefficient is approximately 1.2 times the standard error. This value suggests a modest effect of digital maturity on sales operations. The centered R-squared is negative, indicating that the model does not explain much of the variance in the dependent variable. The model fits moderately, as indicated by the number of correctly predicted cases (53.9%) and information criteria such as the Akaike criterion and the Schwarz criterion. In conclusion, the results suggest that there is no statistically significant association between digital maturity and operational decision-making competence in sales operations. It might be due to the relevant human component in sales activities that could only partially benefit of automation services. In other words, the results align with existing literature, highlighting the practical benefits of high digital maturity, such as improved operational efficiency, cost reductions, increased productivity, and more time for strategic activities. The findings enhance the theoretical understanding of how structural capital, particularly through strategic and operational decision-making competences, contributes to digital maturity. This underscores the multi-dimensional nature of digital maturity and clarifies the impact of various factors driving digital transformation initiatives in firms.

The third component of Intellectual Capital investigated by means of a binary logistic regression model is that of Relational Capital. To study its impact on digital maturity, the research considers the network activated by the companies of the Amalfi Coast Tourist District, in order to explain whether the business network plays a significant role in the digital transformation of SMEs (Table 9).

Effectively, companies embedded in larger or more solid networks have greater opportunities to access the knowledge and resources necessary to successfully implement digital technologies.

The effect of the network in which SMEs are embedded on digital maturity express a positive (coefficient 0.579818) and statistically significant ( $p$ -value 0.000824) association. In other words, a broader or stronger network is associated with higher digital maturity, potentially providing SMEs with greater access to resources, knowledge, and collaborations that foster digital skills development. Furthermore, it is important to further examine which specific network characteristics most strongly influence digital maturity and to identify any success factors that can be replicated or enhanced in other contexts. This may include more detailed analyses of collaboration dynamics, access to resources, and digital skills development within the network.

Finally, the study aims at evaluating the effect of undivided intellectual capital on digital maturity. The analysis indicates that the intellectual capital of SMEs, consisting of Structural Competence (Management Styles), Decision-making Competency, and SMEs' Network, positively impacts the adoption of advanced digital technologies. In sum, firms with a higher level of intellectual capital are more inclined to effectively integrate new technologies into their business processes and the research hypotheses are verified:

**H1.** Managerial style positively influences the digital maturity of SMEs – *verified*.

**H2.1.** Strategic decision-making competences positively influence the digital maturity of SMEs – *verified*.

**H2.2.** Operational decision-making competences are positively influenced by the digital maturity of SMEs – *verified*.

**H3.** The network in which SMEs are embedded positively influences their digital maturity – *verified*.

**H4.** Intellectual capital positively influences the digital maturity of SMEs – *verified*.

A data-driven or participative management style can create an organizational environment conducive to innovation and the adoption of new digital technologies (Shet *et al.*, 2022).

**Table 9.** Impact of SMEs' network on digital maturity of SMEs

	Coef	Std.error	Z	p-value	
Network	0.579818	0.333809	-1.737	0.000824	***

Average dependent variable	0.342105	SQM dependent variable	0.477567
Log-likelihood	-51.10665	Akaike Criterion	104.2133
Schwarz Criterion	106.5440	Hannan-Quinn	105.1448

**Note(s):** Dependent variable: Digital Maturity  
Standard errors based on Hessian matrix  
Number of cases "predicted correctly" = 50 (65.8%)  
 $f(\beta \cdot x)$  in the average of the independent variables = 0.478

**Source(s):** Authors' work

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Coupled with strong decision-making competency, these management approaches enable firms to critically assess opportunities and challenges related to digital technology adoption. This includes effectively analyzing data in a knowledge-based economy (Piccolo *et al.*, 2022), making informed decisions on technology implementation, and managing associated risks. Additionally, strategic partnerships with technology suppliers or other firms within the District can accelerate digital adoption by providing access to new technologies, expertise, and best practices. These partnerships facilitate the exchange of knowledge and resources, further supporting digital technology adoption. Overall, these elements of intellectual capital collectively enhance the ability of SMEs to understand and successfully implement digital technologies.

## 5. Main theoretical, managerial and societal implications

### 5.1 Implications for theory

From a theoretical perspective (Pirogova and Plotnikov, 2020; Ritala *et al.*, 2021; Chernenko *et al.*, 2021), the interaction between digital maturity and intellectual capital holds substantial implications for enhancing organizational capabilities and creating distinctive value propositions. According to Resource Based-View (RBV), both digital maturity and intellectual capital (Murale *et al.*, 2010) can be regarded as core competencies that provide a sustainable competitive advantage. The synergistic interplay between these elements has the potential to harness organizational capabilities and foster the creation of unique value propositions.

In the context of Knowledge Based-View (KBV), digital maturity plays crucial role in facilitating the creation, sharing and utilization of knowledge, thereby augmentation intellectual capital (Kianto *et al.*, 2017). The effective integration of digital technologies can further amplify the value of tacit knowledge within an organization, leading to greater organizational effectiveness.

Dynamic Capabilities Theory (Teece *et al.*, 1997) also provides a valuable lens through which to examine the role of digital maturity. In this view, digital maturity that enables organizations to adapt to rapidly changing environments and leverage emerging technologies. Intellectual capital is essential for developing and deploying these dynamic capabilities, highlighting its importance in maintaining organizational agility and competitiveness.

Furthermore, Social Capital Theory underscore the role of digital platforms in facilitating social interactions and knowledge exchange, which in turn strengthens social capital within organizations. A high level of digital maturity enhances the development and utilization of social capital, contributing to improved organizational outcomes.

Finally, Human Capital Theory suggests that digital maturity impacts the development and utilization of human capital through mechanisms such as e-learning, performance management, and talent acquisition (Gerhart and Feng, 2021; Ployhart, 2021). Intellectual capital is thus crucial for driving digital transformation initiatives and ensuring that organizations remain competitive in a digital economy (Kianto *et al.*, 2017).

Key theoretical relationships emerge from this analysis, including the notion of synergy, where the combination of digital maturity and intellectual capital leads to superior organizational performance. High levels of digital maturity can reinforce intellectual capital by providing tools and platforms for knowledge creation and sharing. Additionally, digital maturity may mediate the relationship between intellectual capital and organizational performance, thereby amplifying the impact of intellectual capital. It can also moderate the relationship between other variables, such as organizational culture and leadership, and intellectual capital, further influencing organizational outcomes.

### 5.2 Implications for practice

The managerial implications from this study are crucial for SMEs in the Amalfi Coast Tourist District and applicable to other business settings. SMEs should prioritize data-driven

management styles to foster digital transformation, promoting a culture that emphasizes strategic data use for informed decision-making, which enhances transparency, collaboration, and innovation (Vial, 2019; Del Giudice *et al.*, 2018). Investing in Intellectual Capital is vital. SMEs must recognize its value by enhancing decision-making competencies, fostering innovation, and building strategic networks, which can accelerate digital transformation and provide a competitive advantage (Youndt *et al.*, 2004; Naidenova and Parshakov, 2013). Additionally, creating an innovation-driven corporate culture through continuous learning, employee training, and change management is essential for adapting to the digital landscape (Demartini and Beretta, 2020). Forming strategic partnerships with stakeholders such as technology providers and research institutions is also crucial. These alliances offer access to advanced technologies and knowledge, facilitating collaboration and innovation in digital transformation efforts. By integrating digital maturity and intellectual capital strategies, SMEs can strengthen their ability to innovate and adapt, positioning themselves to leverage opportunities in the digital era. These approaches offer a roadmap for SMEs to thrive in an increasingly digital context.

### 5.3 Implications for society

The strategies and approaches related to digital maturity and intellectual capital in SMEs have significant societal implications beyond business impacts. By enhancing efficiency, productivity, and competitiveness, these businesses can drive economic growth and job creation, contributing to the vitality of local communities. As SMEs grow, they provide employment opportunities and boost local income, fostering a dynamic economy that benefits society as a whole.

Furthermore, as SMEs invest in upskilling their workforce, employees gain valuable competencies in digital technologies and innovation management, enhancing their employability and contributing to the region's long-term economic and social stability. Strategic partnerships with technology suppliers and research institutes also lead to broader societal benefits, promoting innovation, knowledge sharing, and social capital within communities.

The digital maturity of SMEs also promotes digital inclusion by making digital tools and services more accessible, particularly in underserved areas, thereby reducing the digital divide and fostering social equity. In regions like Campania, where cultural heritage is closely tied to the tourism industry, digital transformation helps preserve and promote local culture through innovative digital experiences. This not only enriches the tourism experience but also ensures the preservation of local traditions for future generations.

Overall, these strategies contribute to economic growth, workforce empowerment, social inclusion, sustainability, and cultural preservation, driving significant positive change within communities and creating a more prosperous, inclusive, and sustainable society.

## 6. Limitations, future research directions and conclusions

The study acknowledges limitations in the quantitative phase, particularly the small sample size of 76 enterprises, which, while adequate for the Amalfi Coast Tourist District, may not be generalizable to broader regional or national SMEs. The research is also constrained by the specific territorial context and the size of the enterprises studied.

To address these limitations, future research could involve a larger and more diverse set of enterprises, including larger companies with different core businesses. By creating clusters based on digital maturity and intellectual capital, researchers could explore these relationships more deeply, providing insights across various industries and sizes. Additionally, examining the evolving nature of these clusters over time and exploring the role of relational capital could enhance the validity and generalizability of the findings.

The study presents a well-defined measurement model for digital maturity, integrating theoretical insights with practical experiences from managers and entrepreneurs. This approach ensures the model's relevance and offers a valuable tool for assessing the impact of digitalization initiatives and prioritizing future projects.

Organizations with both high digital maturity and high intellectual capital are likely industry leaders, distinguished by innovation and effective technology use. In contrast, those with high digital maturity but low intellectual capital struggle to fully leverage their digital investments due to insufficient human capital. Similarly, organizations with low digital maturity but high intellectual capital may be hindered by outdated technology, limiting their ability to translate knowledge into digital success. Firms with both low digital and intellectual capital face significant challenges in adapting to the digital business environment.

The findings emphasize the importance of balancing digital maturity with intellectual capital. Overemphasizing technology without investing in human capital can lead to suboptimal outcomes, while a strong focus on intellectual capital without adequate digital infrastructure can limit an organization's potential. Understanding these dynamics allows organizations to develop comprehensive strategies to optimize both digital maturity and intellectual capital, positioning themselves for sustained success in a digitalized world (Kianto *et al.*, 2017; Vial, 2019).

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