STRATEGIC FACTORS ENABLING DIGITAL MATURITY: AN EXTENDED SURVEY

Research full-length paper

Track 00

Abstract

Over the last decade, new opportunities enabled by digital technologies have become the center of attention of companies. In fact, not only digital technologies transform businesses, they also influence the way people interact and work. Organizations need to adapt to the rapid advances in digital environment and shift their focus from digital transformation to digital maturity. However, it is still not clear which are the main strategic factors affecting the level of digital maturity of businesses. Based on a survey of 153 digital leaders, this study identifies key strategic factors of digital transformation and examines the relationship between them and digital maturity. Our results indicate that the digital maturity is higher when a digital vision is shared by top management, where the vision is adequately communicated within the company, with employees requiring training in digital skills.

Keywords: Digital Maturity, Digital Transformation, Strategic Factors.

1 Introduction

The proliferation of digital technologies has become a significant lever for change in multiple industries. Digital technologies impact all levels of the firm, including business models, sales and marketing, customer and partner interactions, and internal processes. In addition, digital technologies also influence the way people live, interact, consume and work (Kane, Palmer, Nguyen-Phillips, Kiron, & Buckley, 2017; Kane et al., 2015; Snow, Fjeldstad, & Langer, 2017). To ensure successful adoption and usage of digital technologies, organizations need to develop digital capabilities and transform their cultures to manage the digital transformation process successfully (Kane et al., 2017; Perakslis, 2017; Snow et al., 2017)

While digital transformation has been studied and approached by academicians and practitioners alike, it is only recently that firms are viewing it as an effort linked to individual functional areas, such us Human Resources, IT and Sales and Marketing (Westerman, Bonnet, & McAfee, 2014). Research in this area has highlighted that many organizations' actual actions still do not tackle the phenomenon in a comprehensive way, providing therefore limited benefits to the digital transformation initiatives (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; Hess, Matt, Benlian, & Wiesböck, 2016; Singh & Hess, 2017).

Prior research assumes that the development of a specific set of digital capabilities leads to higher digital maturity (Westerman et al., 2014). They also furnish evidence that firms with higher digital maturity earn superior corporate performance. Digital maturity refers to how organizations methodically prepare to adapt consistently to ongoing digital change. Based on the definitions proposed by Kane et al. (2017), we define digital maturity *"as the extent of the learned ability to adapt to the ongoing digital changes and digital transformation efforts in an appropriate manner."*

Kane (2017) argues that managers to better adapt their organizations to the rapid advances in digital environment need to shift their focus from digital transformation to digital maturity. Digital maturity requires implementing new digital technologies by aligning the firm's strategy, workforce, culture, and structure to address the digital expectations of customers, employees, and partners. Therefore, digital maturity is a continuous and ongoing process of adaptation to a rapidly advancing digital landscape (Kane et al., 2017; Westerman, 2019).

Recent research has elaborated on how certain organizational factors play a major role in achieving digital maturity (Gurumurthy & Schatsky, 2019). For example, (Morakanyane, Grace, & O'Reilly, 2017) argue that organizational factors such as culture, strategy and digitally savvy human capital is what enables the digital transformation process. (Kane et al., 2015) also further contend that merely using digital technologies to drive the digital transformation is not adequate and that it also requires developing digital capabilities, strategies, culture and talent and skills. More recently, Westerman (2019) argues that digital transformation is more of a leadership challenge than a technical one and that technology changes more rapidly than organizations.

Although the concept of digital maturity clearly refers to the formation of specific capabilities to manage and execute digital transformation, it is still not clear which are the main strategic and organizational factors that affect the level of digital maturity of a firm. After providing a conceptual foundation and developing a scale for measuring the digital maturity of an organization based on the value chain framework, this study aims at investigating the relationship between digital maturity and different strategic factors.

Based on a literature review, six key strategic factors are included in this study (Bharadwaj et al., 2013; Fitzgerald, Kruschwitz, Bonnet, & Welch, 2014; Hess et al., 2016; Kane et al., 2017, 2015; Matt, Hess, & Benlian, 2015). These factors include top management shared digital vision, top management transformative vision, instruments for internal communication of digital vision, impact of digital technologies on business model, and training and recruitment of employees.

The rest of the paper is structured as follows. In section 2, we discuss the relevant literature and develop the main hypothesis. Section 3 presents the data sources and the research method employed in this research. Section 4 presents the findings. Finally, we elaborate on the findings and discuss avenues for future research in section 5.

2 Prior Research and Hypothesis Development

2.1 Digital Maturity

The term "digital maturity" receives attention in the work of Westerman et al. (2014). They provide evidence that firms with higher digital maturity earn superior corporate performance. Extant literature has increased our understanding of digital maturity. Recent studies have proposed several *maturity models* based on different approaches (Berghaus & Back, 2016; Canetta, Barni, & Montini, 2018; Klötzer & Pflaum, 2017; Remane, Hanelt, Wiesboeck, & Kolbe, 2017; Valdez-de-Leon, 2016). Maturity models share the common property of defining several dimensions/ process areas at several discrete stages /levels of maturity (Fraser, Moultrie, & Gregory, 2002). In other words, maturity models consist of dimensions and criteria, which describe the key areas of action, and the different stages that indicate the evolution path towards maturity. Berghaus & Back (2016) identified nine dimensions of the maturity model and proposed five stages in the digital transformation process, namely: Promote and support, Create and build, Commit to transform, User-centered & elaborated processes and Data-driven enterprise. In another line of research, scholars have also developed maturity models for digitalization in the manufacturing industry and in the telecommunications sector (Klötzer & Pflaum, 2017; Valdez-de-Leon, 2016).

Maturity models can either be descriptive (as-is assessment), prescriptive (to-be assessment) or comparative (benchmarking)(Röglinger, Pöppelbuß, & Becker, 2012). While maturity models do make important contributions to the field in identifying the different dimensions of maturity and mapping these dimensions across different stages, the relationship between a certain level of digital maturity and enabling factors needs to be further investigated.

Our research stream links the concept of digital maturity to the state of digital initiatives that are being undertaken across the organization's value chain. Thus, our focus is on the execution of digital transformation initiatives in an organization. Our emphasis on the actual execution of the digital initiatives to measure digital maturity corresponds to the stage two and three (i.e., Create and build, and Commit to transform) of the maturity model proposed by Berghaus & Back (2016). Therefore, in preparation for the development of a well-grounded measurement scale, we build upon the value chain framework (Porter & Millar, 1985). More specifically, the value chain framework appears appropriate for our purposes due to the following reasons:

- Digital transformation is a transversal phenomenon that spans across different organizational functions. The proliferation of digital technologies has opened the door to potential business opportunities, enabling organizations to create new business models (Hess et al., 2016; Kane et al., 2015; Matt et al., 2015; Singh & Hess, 2017),
- Value chain framework provides a comprehensive view of firm-level activities, improving the objectivity of a measure of digital maturity by addressing the level of development of digital initiatives in each of the core areas of the organization,
- It is a relevant measure for assessing competitive advantage, therefore facilitating the connection between digital maturity and their contribution to the firm's success,
- It enables the complete measurement of the impact of disruptive technologies on the overall company's value chain (Bharadwaj et al., 2013; Porter & Heppelmann, 2014; Porter & Millar, 1985),

- It facilitates the capturing of the signs of successful technologies' implementation, since it has been recognized that impact is manifest only with adoption of technologies in an extensive way through the value chain (Hess et al., 2016; Koc & Bozdag, 2017; Zhu, Kraemer, & Xu, 2006),
- Application of the value chain framework implies that a digitally mature business is characterized by a view of digital technologies which goes beyond the view of IT as a function, recognizing the pervasiveness of technologies in other functional areas (Bharadwaj et al., 2013),
- Value chain aids to map digital initiatives consistently with the necessity to explicitly link the usage of digital technologies with the creation of differential value for the organization (Bharadwaj et al., 2013).

2.2 Digital Maturity and Strategic Factors

Attaining digital maturity requires establishing a digital strategy and aligning the overall strategy with the digital objectives of the firm (Bharadwaj et al., 2013; Hess et al., 2016; Singh & Hess, 2017). This implies, successful digital transformation initiatives recognize the radical nature of new digital technologies and develop capabilities for change (Remane et al., 2017). Furthermore, organizations need to prepare to compete with fundamentally reconfigured resource bases and innovate their business models to derive value from digital transformation.

Scholars have identified digital pivots and factors that propel an organization's progress towards digital maturity (Gurumurthy & Schatsky, 2019; Westerman et al., 2014). For example, Gurumurthy & Schatsky (2019) identify an array of digital capabilities (flexible infrastructure, digital talent network, business model adaptability, data management, ecosystem engagement, intelligent workflows and unified customer experience) that are central to digital maturity of organizations. Furthermore, Westerman et al. (2014) have also discussed a number of factors, for example, shared digital vision and transformative vision by top management that lead to higher digital maturity in organizations. Both these studies have highlighted key factors that drive digital transformation and subsequently lead to digitally mature organizations. To examine the relationship between digital maturity and the key factors of digital transformation, we focus on this set of **strategic factors**.

Top management shared digital vision

Much literature around digital transformation has already stressed the importance of the presence of a compelling digital vision by top management. In particular, Westerman et al. (2014) note that aligning the top management team around a vision of the company's digital future is crucial to attain digital mastery. They also highlight that organizations wherein, top management shares a common vision of the changes brought through digital technologies achieve competitive advantage. Furthermore, Westerman et al. (2011) discovered that organizations with a strong unifying digital vision shared by the senior executives are likely to achieve digital maturity than those where a shared vision is absent. Thus, we propose a positive relationship between the presence of "Top Management shared digital vision" and the digital maturity and hypothesize as follows:

H1: The presence of a "Top Management shared digital vision" is associated with higher levels of the digital maturity

Top management transformative vision

Digital technologies have a pervasive impact on business, transforming the customer experience, improving productivity in operations and altering the way workforce collaborate. Yet, many organizations fail to derive value from digital technologies because their leaders lack a transformative vision. Earlier research has considered top management transformative vision as a key element to drive digital transformation efforts. Westerman et al. (2014) argue that while the presence of a shared digital vision by

top management is critical to create a compelling vision of the future, it is also necessary that top management communicates the transformative nature of this transformation. In fact, it is argued that organizations need a transformative vision to capture the full potential of digital technologies (Matt et al., 2015). Hence, we hypothesize a positive relationship between the level of top management transformative vision and the digital maturity. Our second hypothesis reads as follows:

H2: The level of top management transformative vision is associated with higher digital maturity

Instruments for internal communication of the digital vision

For the organization to make the digital vision a reality, it is necessary to engage employees and managers at all levels (Fitzgerald et al., 2014). Digital champions within the organization should set clear expectations on what needs to change through communication efforts (Westerman et al., 2014). In addition, organizations need to mobilize the entire organization on the impact of digital transformation and align around a future vision. By implementing various instruments to communicate the digital vision such as strategic plans, internal communication instruments and events, organizations can ensure better adaptability towards the digital transformation efforts and hence, a higher level of digital maturity. As reported by (Westerman, 2019), "*Great visions paint a clear picture of a better company — one that is better for customers and employees. You need to help people understand why the new vision is better than the old way of working. And you need to help employees understand how they fit in the transition process and the future state. If you've set the stage properly, they may even start suggesting ways to make the vision a reality"*

Thus, our third hypothesis posits a positive relationship between the usage of communication efforts and the digital maturity and reads as follows.

H3: The presence of instruments for internal communication efforts is associated with higher levels of the digital maturity

Perceived Impact of digital technologies on the business model (BM)

Digital technologies have disruptive characteristics as outlined in the literature review section. These characteristics urge companies to modify elements of their business model in order to stay competitive and embrace the benefits and counter the challenges posed by the new environment.

H4: The perceived management view on business model improvements due to digital technologies is positively associated with the digital maturity

Employee Training and Recruitment

The necessary changes in products, processes, services and organizational structure to digitally transform will certainly require new skills (Hess et al., 2016). Two options are available to companies: develop internal talent through new hiring or train existing talent. It is found by research that training and hiring new talents better positions companies to gain competitive advantage from transformation initiatives. Moreover, companies with no investment or hiring are doomed to lose talents as they move to companies offering access to resources and opportunities to develop in a digital environment (Kane et al., 2017). Hence, we expect that both hiring new employees with digital skills and training the existing employees to cope up with the new digital technologies will result in a higher digital maturity for an organization. Therefore, we hypothesize as follows:

H5: Training of employees is positively associated with higher digital maturity

H6: Recruitment of employees with digital skills is positively associated with higher digital maturity

The graphical illustration of our variables and the related hypothesis is shown in figure 1 below.

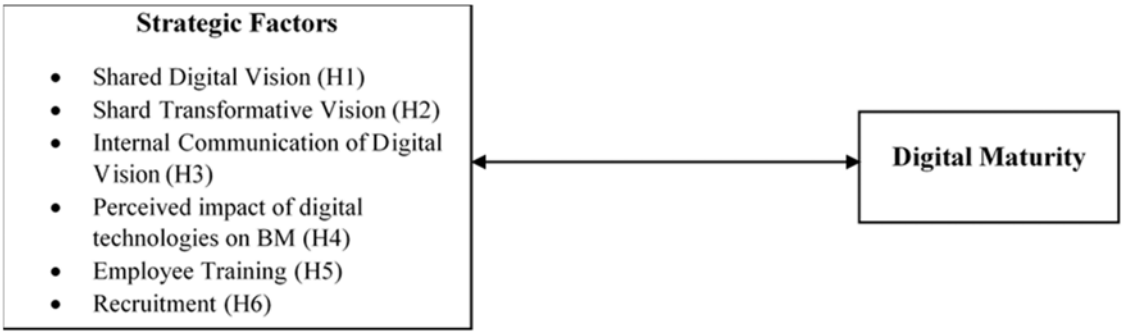

Figure 1. Research model and proposed hypothesis

3 Data Sources and Research Methods

In terms of the data collection, the population addressed in the study is represented by companies operating in the Italian market with revenues greater than 150,000,000 euros, identified through the AIDA (Analisi Informatizzata delle Aziende Italiane) database. Starting from 1,162,998 companies present in the database, 1,920 companies were identified. Subsequently, subsidiaries of the selected companies were excluded from the database, which led to the identification of 1395 companies. A cross-sectional sample of 460 companies was identified and contacted by email and phone. The survey was pre-tested by five respondents from the sample to check the clarity of the measures and questions. No significant issues were mentioned, apart from minor wording modifications. Finally, 170 responses were collected with a response rate of 37%. The target respondents are the organization's Chief Information Officer or their equivalent at the global, regional or national level. Starting from the 170 responses collected, 153 were finally analysed for this study as the remaining ones did not complete 100% of the survey.

To develop the scale for digital maturity, we undertook a principal component analysis followed by oblimin rotation to examine dimensionality and identify items for deletion. A ten-item solution was the most appropriate according to a variety of commonly applied criteria: inspection of screen plots, interpretability, and eigenvalues greater than one. We also implemented checks for reliability and internal consistency using Cronbach alpha, discriminant validity and convergent validity, that were all under the suggested thresholds.

3.1 Digital Maturity: Scale Development

We considered digital maturity as a quantitative score expressed by the respondent in the questionnaire according to the level of development of digital initiatives, using a symmetric 5-point Likert scale. Each item listed in the questionnaire can assume "1" as the lowest value that corresponds to "absence of digital initiatives" in the activity performed by the organization. Instead, the highest value, "5" corresponds to "developed and ongoing. The measurement framework is depicted in Table 1 on the next page.

The value chain framework used for the assessment has been modified in respect to the original, in order to better capture the intensity of the digital initiatives in the different areas. In particular, "Firm Infrastructure" label has been removed because deemed to be too broad. Instead, "IT Infrastructure" and "Administration, Finance and Control" have been added as support activities. "IT Infrastructure" has been inserted, in order to clearly isolate the IT function. The final ten aspects, that were used to develop the scale for digital maturity are: IT Infrastructure, Human resource management, Research and Development, Administration, Finance and Control, Procurement, Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, and Post-Sales Services.

Aspect	Item: Our company has initiated or planned digitization initiatives, and, in which phase they are positioned (Possible values: 1 = absence of digital initiatives; 2 = planned; 3 = just started; 4 = under development; 5 = developed and ongoing.
1 IT Infrastructure	..
2 Human resource management	..
3 Research and Development	..
4 Administration, finance and control	..
5 Procurement	..
6 Inbound logistics	..
7 Operations	..
8 Outbound logistics	..
9 Marketing and sales	..
10 Post-sales services	..

Table 1. Ten aspects of the value chain framework that are used to measure digital maturity.

To develop the scale for digital maturity, we undertook a principal component analysis followed by oblimin rotation to examine dimensionality and identify dimensions for deletion. A ten-dimension solution was the most appropriate according to a variety of commonly applied criteria: inspection of screen plots, interpretability, and eigen values greater than one. We also implemented checks for internal consistency using Cronbach alpha. All the ten items of our study map onto two factors (the two factors correspond to the primary activity and support activities of the value chain framework). The Cronbach alpha for the scale is 0.826, indicating a good internal reliability. Finally, to evaluate the relationship between digital maturity and strategic factors, digital maturity is measured as the as the **median** of the ten multiple-items

3.2 Measurement of Strategic Factors

The strategic factors were measured and evaluated with a Likert type scale and in some cases, were recorded as a dummy variable. Below is a description of how the variables related to the hypothesis developed above are measured and calculated.

Top management shared digital vision

The respondents were asked to rate the presence of a shared digital vision with a 5-points Likert scale, were the extremes ranged from “not at all” to “very much” (1: not at all; 2: little; 3: average; 4: somewhat; 5: very much).

Top management transformative vision

The respondents were asked to rate on a 5-points Likert scale the presence of such transformative vision, where the extremes ranged from “not at all” to “very much”. The variables were measured according to seven items, namely “relationships with suppliers and partners”, “core processes”, “value proposition”, “cost structure”, “clients relationships”,” distribution channels” and “target clients. This construct is measured as the **median** of seven 5-points Likert scales.

Instruments for communication of the digital vision

The respondents were asked to indicate the presence or absence of instruments for internal communication of the digital vision. The variable is measured as a dummy variable, that takes two value, a 0 in the case of absence of such instruments and a 1 in the presence of such instruments.

Perceived Impact of digital technologies on the business model

The perceived impact of digital technologies on the business model is captured with the **median** of nine 5-points Likert scale, where the two extremes are respectively "not important" and "very important". The variable is measured through nine items that represent the components of the business model according to the business model canvas (Osterwalder & Pigneur, 2010), namely "Customer segment", "Value proposition", "Internal coordination", "Customer relationships", "Revenue streams", "Decision-making processes", "Key activities", "Key Partnerships", and "Cost Structure".

Training and recruitment of employees

Respondents are asked to rate their companies according to the percentage of employees that receive training, namely 0-10%, 11-50%, over 50%. Moreover, to indicate the hiring of employees with digital skills, respondents were asked to indicate whether they hire new employees with digital skills. The variable is measured as a dummy variable, that takes two value, a 0 in the case when no hiring takes place and a 1 in the presence of hiring of employees with digital skills.

To test our hypothesis and examine the relationships between the digital maturity scale and strategic factors, this study employed non-parametric tests (as the assumptions of normal distribution and homogeneity of variance stand violated). Specifically, we undertook, the Mann-Whitney test (for hypotheses 3 and 6), Kruskal-Wallis H test and Dunn Bonferroni post hoc test (for hypotheses 1 and 5) and spearman's correlation test to verify the hypothesis 2 and 4 of this study.

4 Findings

The internal reliability of the digital maturity scale is good (Al-Adwan, Al-Adwan, & Smedley, 2013) as assessed by Cronbach's alpha coefficient 0.817. In order to assess the factorability of the data and ensure sampling adequacy, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were applied. The KMO value is 0.823, which indicated sampling adequacy. The results of PCA are also in line with the recommended thresholds. The ten items map onto two main factors with factor loading of above 0.50 (Hair, 2006).

To test the first hypothesis, we used Kruskal-Wallis Test. Median digital maturity scores was statistically significantly different between the different levels of digital shared vision, $p = 0.000$ (as depicted in Figure 2 below). Our results indicate that a digital shared vision by top management about the role of digital technologies is positively associated with higher level of digital maturity. Subsequently, pairwise comparisons were performed using Dunn's procedure with a Bonferroni correction for multiple comparisons (Dunn, 1964). This post hoc analysis revealed statistically significant differences in median digital maturity scores between the "little" and "very much" ($p = 0.00$), and "average" and "very much" ($p = 0.012$) groups, but not between any other group combinations. Thus, the results obtained provide partial support for hypothesis 1.

	Digital_Maturity
Kruskal-Wallis H	40.421
df	4
Asymp. Sig.	.000

Figure 2. Kruskal-Wallis Test Statistics for Hypothesis 1

To examine the relationship between top management transformative vision and digital maturity (i.e., hypothesis 2), we first established the reliability of the construct, top management transformative vision. The construct has a high level of internal consistency, as determined by a Cronbach's alpha of 0.865.

Next, a Spearman's correlation was performed to assess the relationship between the of "top management transformative vision" and the "digital maturity" score. There was a statistically significant (p=0.01) moderate positive relationship between the two variables (rho=0.391) (see Figure 3 below).

			Digital_Maturity	Digital_Transformative_Vision
Spearman's rho	Digital_Maturity	Correlation Coefficient	1.000	.309**
		Sig. (2-tailed)	.	.000
		N	153	153

Figure 3. Spearman's coefficient between the median values of transformative vision and digital maturity

Hypothesis 3 stated that the presence of communication instruments is associated with higher digital maturity. To test this, this study employed Mann-Whiney test to examine if there are differences in the digital maturity across the two groups of the construct, the presence of communication instruments. The Mann-Whitney test is significant at 0.00 significance level. The results are depicted in Figure 4 and 5 below. Based on results, we can conclude that the mean ranks are different across the two groups and that the mean rank of digital maturity is lower for organizations that do not have instruments for communication of digital vision.

	Instruments for Internal Communication	N	Mean Rank
Digital_Maturity	No	13	144.80
	Yes	140	188.17
	Total	153	

Figure 4. Mean rank for digital maturity across two groups (absence and presence of instruments for internal communication)

	Digital_Maturity
Mann-Whitney U	9678.000
Wilcoxon W	15349.000
Z	-3.697
Asymp. Sig. (2-tailed)	.000

Figure 5. Mann-Whitney Test Statistics for Hypothesis 3

To examine the association between the impact of digital technologies on the business model and the digital maturity (i.e., hypothesis 4), we followed similar steps adopted for hypothesis 2. In the first step, the internal consistency of the construct (impact of digital technologies on business model) was established. The results are in line with the suggested thresholds (Cronbach alpha of 0.863). In the second step, we used Spearman's correlation was performed to evaluate the relationship between the two constructs of "impact of digital technologies" and the "digital maturity".

			Digital_Maturity	Impact_BM_DigitalTech
Spearman's rho	Digital_Maturity	Correlation Coefficient	1.000	.341**
		Sig. (2-tailed)	.	.000
		N	*153*	*153*

Figure 6. Spearman's coefficient between the means of digital technologies impact on business model and digital maturity

The results indicate a moderate level of positive correlation between the two constructs (rho=0.341, statistically significant at 0.01) (see Figure 6 above).

Next, we assessed the relationship between the percentage of employees that receive training and the digital maturity score (Hypothesis 5), we implemented Kruskal Wallis Test (as the assumptions of homogeneity of variance and normal distribution stand violated). Our results (depicted in Figure 7 below) imply that the overall differences in the digital maturity scores between the groups (percentage of employees that receive training, p = 0.000) is significant. Applying Bonferroni pairwise comparisons, digital maturity score in over 50% group is significantly higher than in the 1-10% (p=0.000) and 10-50% (p=0.015) group but not significantly higher than in 0% and don't know group.

	Digital_Maturity
Kruskal-Wallis H	25.431
df	3
Asymp. Sig.	.000

Figure 7. Kruskal-Wallis Test Statistics for Hypothesis 5

Hypothesis 6 examines the relationship between the digital maturity and the hiring of employees with relevant digital skills. To test this, we employed Mann-Whiney test to test if there are differences in the digital maturity score across the two groups of the construct, the hiring of employees with digital skills. Figure 8 and 9 below represent the key results

	Recruitment_Dig_Skills	N	Mean Rank
Digital_Maturity	0 (No hiring)	71	152.61
	1 (Hiring is present)	82	195.31
	Total	153	

Figure 8. Mean rank for digital maturity across two groups (no hiring and hiring of employees with digital skills)

	Digital Maturity
Mann-Whitney U	11471.500
Wilcoxon W	25332.500
Z	-3.954
Asymp. Sig. (2-tailed)	.000

Figure 9. Mann-Whitney Test Statistics for Hypothesis 6

Mann-Whitney test indicates that the overall differences in digital maturity score between the no hiring and hiring are significant. Applying Bonferroni pairwise comparisons, digital maturity score for the hiring group is significantly higher (mean rank=195.3) than for the no hiring group (mean rank=152.61).

5 Discussion, Limitations and Conclusion

The aim of this research was to examine the relationship between digital maturity and other strategic factors. To develop a scale for measuring digital maturity, we build upon the value chain framework. To further examine the relationship between digital maturity and other strategic factors we build upon the related research to understand the key variables that affect the digital transformation efforts and consequently, digital maturity in organizations.

Our results indicate that a digital shared vision by top management about the role of digital technologies is positively associated with higher level of digital maturity. Thus, our findings corroborate the evidence that top management's shared digital vision plays a key role in the successful digital transformation of firms (Westerman, 2019). The study also supports the presence of a transformative vision by top management and has been found to be positively associated with the digital maturity. The findings also indicate that firms that invest in communication of the digital vision have higher digital maturity than those who do not.

The results also lend evidence to the presence of a higher digital maturity for companies adopting a company-wide perspective on the impact of digital technologies than for those that focus on a single or limited number of functions or processes. Furthermore, the results also support the positive relationship between the presence of a favorable view on digital technologies in positively altering the business model and the digital maturity. Our study also provides evidence for an association between higher digital maturity and training and hiring of employees with digital skills

Our paper extends the work of (Isaev, Korovkina, & Tabakova, 2018; Valdez-de-Leon, 2016; Westerman et al., 2014) by proposing a scale for measuring digital maturity and exploring the relationship between digital maturity and key factors of digital transformation. Thus, we respond to the call by researchers to establish relationships between the digital maturity construct and the general hypotheses of Rossmann (2018) and Westerman et al. (2014).

Limitations of the presented research include the empirical foundation of the measurement scale and the corresponding results, which was constrained by empirical findings from Italy. Future research might use the defined measurement scale for item testing in a different cultural context.

In conclusion, this research provides a conceptual foundation and a defined measurement scale for digital maturity. We also established the relationship between digital maturity and key factors of digital transformation. The findings of this research might be viewed as an important basis for a large array of corresponding research initiatives. Practitioners can immediately adopt the measurement framework and use the defined metrics to evaluate the current state and progress of their digital transformation efforts.

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