Digital transformation, organisational capabilities, and SME performance - size matters

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Abstract: This paper aims to reveal organisational capabilities of small and medium-sized enterprises (SMEs) to transform digitally and to explore some differences between enterprises' groups. The study approaches digital transformation as transformative and continuous organisational change facilitated by digital technologies and describes the capabilities of SMEs to navigate such a change. This research is quantitative and uses data from a sample of 308 SMEs in Bulgaria, collected during October-December 2023. Five composite variables (transformational leadership, organisational flexibility, risk-tolerant culture, digital skills, and digital business intensity) are used to describe SMEs' ability to implement DT-induced organisational change. Based on these variables, a cluster analysis is applied, which delineates four distinct groups of SMEs. The results show that medium-sized firms do much better on all five variables and demonstrate better firm performance than micro-enterprises.

Keywords: digital transformation, organisational capabilities, organisational change, SMEs

Introduction

Digital transformation (DT) continues to attract rising interest among researchers and practitioners. The rapid development and commercialisation of new technologies have created numerous opportunities for firms to optimise processes, devise new business models, improve value propositions, and better respond to customer needs, as well as meet sustainability pressures from consumers and regulators' requirements (Doğan & Başar, 2025). DT has profound effects on both economies and societies worldwide, on every firm in every industry and of any size (Becker & Schmid, 2020).

Studying DT definitions in SME-related research, Meier (2021) extracts two main views – techno-centric and strategic. Similarly, Reis et al. (2018) categorise DT definitions into three groups: (1) technological - based on the use of digital technologies, (2) organisational - change of organisational processes or creation of new business models, and (3) social - phenomenon influencing all aspects of human life.

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DT has important organisational implications that are reflected during the transformation process, and the strategic perspective should be complemented by the organisational lens to allow an understanding of the phenomenon (Wessel et al., 2021).

While the direction and specifics of technological advancements might be difficult to foresee, they will inevitably require continuous changes in organisations to enable their effective utilisation. This paper explores DT from the organisational perspective and the change it incurs. Vial sees DT as "a process where digital technologies create disruptions triggering strategic responses…to alter value creation paths while managing the structural changes and organisational barriers that affect the positive and negative outcomes" (Vial, 2019, p. 118). Organisations need to transform their routines and structures to be able to manage the challenges and opportunities presented by digital technologies (Berghaus & Back, 2016). Technologies are the means to achieve goals and better performance, and organisational changes are the mechanisms that ensure employees adopt them.

Firms are both affected by and need to adapt to the proliferating digital technologies (Hanelt et al., 2021). The success of such adaptations is researched and theorised in the domain of organisational change (OC). Thus, this study borrows Hanelt et al. (2021, p. 1160) definition of "DT as organisational change that is triggered and shaped by the widespread diffusion of digital technologies". These authors highlight that extant research on organisational change only partially responds to the nature and requirements of DT studies. Still, digital transformation is currently largely explored from the information-systems point of view, which conceptualises DT as an IT-enabled transformation, and much less from the management studies perspective (Vial, 2019). Approaching DT as an organisational change helps shift the focus from the types of technologies to the organisational capabilities to implement the necessary changes.

SMEs are of particular interest as they often face resource limitations in deploying advanced digital technologies (Becker & Schmid, 2020). They are constrained in knowledge and skills to evaluate and implement DT-related opportunities (Barann et al., 2019; Zhang et al., 2022), and often lack dedicated people to handle DT projects (Dörr et al., 2023). On the other hand, SMEs are more flexible (Barann et al., 2019) due to their smaller size and simpler processes. SMEs often have flatter organisational structures and centralised decision-making processes. Thus, they can integrate new technologies much faster (Becker & Schmid, 2020).

Several recent studies have explored digital transformation in SMEs from various angles, adding to the body of knowledge on the process of DT in SME (Al-Omush et al., 2023; Barann et al., 2019; Becker & Schmid, 2020; Dörr et al., 2023; Kitsios & Kamariotou, 2021; Li et al., 2018; Palade & Møller, 2023; Zhang et al., 2022). Yet, existing literature lacks sufficient empirical studies on the digital transformation of SMEs from the organisational perspective (Becker & Schmid, 2020; Palade & Møller, 2023). Although various authors have attempted to synthesise previous literature to allow a better understanding of enablers and barriers

to SME digital transformation efforts, many are constrained by their industry focus or sample size (Meier, 2021).

Previous research confirms that SMEs are a rather heterogeneous group (Meier, 2021) and should not be approached in the same vein. The present study responds to the above-identified gaps and seeks to contribute to the knowledge of DT-triggered change in SMEs. Applying the dynamic capabilities framework (DCF), it focuses on the organisational capabilities of SMEs to digitally transform. To explore the underlying patterns, a cluster analysis is performed. The study is quantitative and is based on a survey of 308 SMEs in Bulgaria. It aims to answer the following research questions:

1. What organisational capabilities support DT-triggered change in SMEs?
2. Can these organisational capabilities distinguish different groups of SMEs?
3. What are the differences between the distinct clusters of SMEs?
4. Do the clusters of SMEs differ by firm performance?

The rest of this paper is organised as follows. The first section explores the theoretical background and formulates the hypotheses that guide the study. The second section explains the methodology employed. The third section presents the data analysis and the results obtained. The fourth section discusses the findings in view of previous research. The last section concludes.

1. Literature review

Various authors approach DT from the resource-based view (RVB) (Eller et al., 2020) and its extension in the context of highly dynamic environments – the dynamic capabilities framework (Al-Omush et al., 2023; Li et al., 2018). RBV and DCF have been widely used as the guiding theoretical frameworks in both digital transformation and organisational change domains.

RBV sees organisational capabilities as "doing" as opposed to resources, which are seen as "having" (Spanos & Prastacos, 2004). The dynamic capabilities help explain the success of firms in rapidly shifting environments (Leemann & Kanbach, 2022) and represent patterned organisational behaviour that can be repeated, similar to operational behaviour (Helfat et al., 2007). From the DT point of view, these capabilities are related to the firm's aim to leverage digital technologies and imply changes in its resources, processes, strategy and business model (Cannas, 2023). Cannas (2023) argues that DCF is the proper theoretical lens to investigate DT as it stresses the key role of resources and capabilities in a fast-paced, turbulent environment. Similarly, other authors highlight the growing importance of DCF in studying digital transformation (Dörr et al., 2023; Proksch et al., 2024).

OC studies also largely apply the DCF lens. Dynamic capabilities are related to change in the organisation as opposed to the ordinary, operational capabilities (Winter, 2003). Schilke et al. (2018) summarise two main outcomes of the dynamic capabilities – firm-level performance and organisational change. According to

Wenzel et al. (2020), the performance of organisational routines is both a source of stability and change in the organisation.

As with other types of change, introducing digital technologies implies that people in the organisation will do things in new ways or do new things. OC studies delve into how organisational members accept, implement, and sustain – or not – the required new behaviours. Dynamic capabilities refer to the capacity to identify the need or opportunity for change, formulate a response and implement it (Helfat et al., 2007). According to Helfat et al. (2007) these include various organisational and managerial processes. The dynamic capabilities refer to specific strategic and organisational processes, and are rooted in three groups of factors: (1) organisational - structure, culture, resources, IT; (2) individual/team - human resources, leadership, managerial knowledge; and (3) environmental - incl. dynamism, unpredictability, inter-organisational structure (Schilke et al., 2018).

1.1. Digital transformation as organisational change

The term transformation refers to fundamental change and requires realignment of internal structures, business models, and organisational learning processes (Berghaus & Back, 2016). As such, it naturally throws a bridge to the OC domain. Organisational change can be defined as a complex of individual and collective events, activities and actions which unfold over a period of time in a specific context (Pettigrew et al., 2001) and lead to an empirically observable difference in the characteristics, form and state of an organisational unit (Van de Ven & Poole, 1995).

DT includes an array of technologies and emerges as a dominant paradigm (Rêgo et al., 2022). It is seen as the third stage in an evolutionary process, which starts with digitisation (transforming analogue data into digital) and is followed by digitalisation (applying digital technologies to processes, products and services) (Dörr et al., 2023). DT implies an iterative process comprising incremental and disruptive changes enabled by digital technologies (Barann et al., 2019). These changes profoundly impact organisational strategies, business models and cultures (Li et al., 2018). Wessel et al. (2021) argue that more attention should be paid to the nature of DT as a radical, but also longitudinal change.

Hanelt et al. (2021) highlight that DT is manifested by a shift towards malleable organisational designs. The real challenge DT poses refers to how organisations manage the transition between the current state towards a desired future while evaluating and recalibrating the direction along the way (Rêgo et al., 2022). DT is not a single project, limited in time and scope, but rather a long journey as technologies change even faster. DT can be best understood as a continuous change (Hanelt et al., 2021).

Based on extant literature on DT, Vial (2019) summarises an overarching sequence of relationships. In his resulting model, organisational changes refer to four

variables (structure, culture, leadership, and employee role and skills) that affect the strategic responses and lead to positive or negative outcomes. This paper steps on the above organisational variables identified by Vial.

1.2. Digital transformation and SMEs

Similar to large firms, SMEs face the challenge of adapting to accelerated competition and market demands related to the fast development of digital technologies (Meier, 2021). Digital technologies pose a specific set of challenges but also provide means to achieve sustainable development and competitive advantages. In their 2023 SME and Entrepreneurship Outlook, Organisation for Economic Cooperation and Development (OECD) concluded that "many small firms continue to lack the skills needed to fully leverage on the potential of digital technologies, increasing the risks of deepening digital gaps… the most prevalent challenges reported by small firms, and in particular micro firms, were a lack of technical skills and knowledge" (OECD, 2023).

The focus on SMEs is grounded in their important role. Often, SMEs are cited as comprising around 90% of many national economies and contributing significantly to employment. Yet, they are a considerably diverse group and demonstrate divergent capabilities to handle DT opportunities and challenges. Importantly, SMEs are not a scaled-down version of large companies (Dörr et al., 2023).

Limitations in SMEs' resources and capabilities are a major obstacle leading to a slower DT process (Zhang et al., 2022). Becker and Schmid (2020) find that the purpose of a digital strategy also depends on the size of the firm, with SMEs primarily aiming to adapt internal and external processes to the entire firm's optimisation.

SMEs, however, have other important differences in leadership and management, organisational structure, culture, and decision-making processes (Inan & Bititci, 2015). Meier (2021) highlights several SME digitalisation enablers, including agility and adaptivity, culture; managerial commitment and openness, strategic orientation; and employees' knowledge and skills. Importantly, the factors influencing DT may simultaneously act as drivers and barriers (Dörr et al., 2023).

DT requires and is also facilitated by more flexible organisational structures of SMEs (Becker & Schmid, 2020). SMEs' staff members who are newly hired for DT projects can disseminate a "digital culture" and update operational capabilities with new knowledge and skills (Matarazzo et al., 2021). SMEs adapt more easily due to their flatter hierarchies and less rigid internal processes. Entrepreneurs usually initiate and drive digital transformation (Annosi et al., 2023; Li et al., 2018) – this can accelerate the process and give clear direction. Annosi et al. (2023), however, highlight the importance of managerial cognitive aspects, which are needed to overcome inertia and resistance to change related to DT. Managerial perception of

the importance of technology for a firm's development is what distinguishes SMEs with low and high levels of technological integration.

1.3. SMEs' organisational capabilities to implement DT-triggered change

Based on a literature review, this study uses the factors identified by Vial (2019) and operationalises them into five composite variables. Organisational flexibility (OF) reflects the ability of the organisation to react quickly to changes while leveraging collaboration internally (across functions and departments) and externally (with partners). It implies balancing DT-related activities and innovations with day-to-day operations. Hanelt et al. (2021) investigate DT from the OC lens and conclude that DT pushes firms to more adaptive organisational structures. Vial (2019) finds support in previous research for the importance of cross-functional collaboration and the need for agility in the context of a fast-paced digital technological environment. Similarly, Kane (2019) reports the need for agility, collaboration and organising around cross-functional teams.

This study conceptualises risk-tolerant culture (RC) as a shared understanding that DT enables innovation and comes with certain risks of failure. A risk-tolerant culture means mistakes are acceptable and discussed openly. Such a culture encourages employees to develop digital skills. The key features of the "digital culture" are a willingness to take risks, experiment, and foster learning (Vial, 2019). In an empirical study, Kane (2019) also finds that DT requires encouraging experimentation and learning, and accepting appropriate levels of risk of failure.

Transformational leadership (TL) relates to top and mid-management's clear understanding of the importance of and support for DT. DT is reflected in the strategy and assignment of clear goals, roles, responsibilities, and processes. Most OC studies point to the importance of leadership. Burke (2011) highlights the role of top management and the importance of tasks such as charting the vision and direction, and inspiring and empowering others. Griffith-Cooper and King (2007) define change leadership as a set of principles, techniques or activities which aim to impact how change is perceived. Leadership is related to shaping the organisational climate and culture (Schneider et al., 2017) in the desired direction. For DT, leadership is the second most important success factor (Kane, 2019). Kane (2019) highlights that digital leadership is about a transformative, forward-looking and change-oriented vision and not so much about understanding the technology itself.

Digital skills (DS) are understood here as the ability to use digital technologies and apply them to innovate. These skills are subject to constant development, thus, training and learning are essential. The introduction of digital technologies itself is not enough for a firm to realise the benefits of DT. Employees have to adopt the new technologies and possess or acquire adequate digital skills (Zhang et al., 2022). Moreover, digital skills are a prerequisite for organisations to achieve their goals and to benefit from investments in digital technologies (Cetindamar Kozanoglu &

Abedin, 2021; Dıvrık et al., 2022). Kane (2019) highlights the need to rethink talent to be able to manage DT – it is much easier to implement new technology and much more difficult to change the way employees work together. Two digital skills aspects are included in this study – technical (the ability to use digital technologies) and creative (digital technologies as a means for innovation).

This paper borrows the definition of digital business intensity (DI) proposed by Nwankpa and Datta (2017) – it measures the level of strategic organisational investment in emerging and innovative digital technologies. Increasing investments in IT allows firms to be better positioned to meet their performance goals, respond to competitive pressure, and customer demands. The construct captures the intensity of digital connections and interactions with partners and customers (Schaarschmidt & Bertram, 2020). Not all investments in digital technologies, though, realise their full value. Their impact depends on the alignment with complementary organisational elements such as strategies, structures and processes (Fichman & Nambisan, 2010; Nwankpa et al., 2022). Digital technologies should be well-fitted into the current business processes and operations and reflected in the strategy.

Improving firm performance (FP) is often among the main goals of organisational change, digital transformation included. FP can be expected to associate with the organisational capabilities to implement continuous change in dynamic environments. Klarner and Raisch (2013) find that firms that change regularly tend to outperform those that change irregularly. Joensuu-Salo et al. (2018) find that digitalisation affects the firm performance of SMEs operating in their domestic markets. Eller et al. (2020) also find evidence that digitalisation drives SME performance. FP reflects a firm's competitive position on three dimensions – profitability, sales growth and customer retention. These three indicators are used in the present study to assess the predictive validity of the four-cluster solution.

Therefore, the study focuses on five organisational capabilities to implement DT-triggered change: organisational flexibility, risk-tolerant culture, transformational leadership, digital skills, and digital business intensity. Based on the literature review, the following hypotheses are raised:

H1: Five composite variables (OF, RC, TL, DS, DI) can distinguish well between different groups of SMEs.

H2: There are differences between different groups of SMEs based on their demographic characteristics.

H3: SMEs with better results on these five variables also demonstrate better firm performance.

2. Methodology

2.1. Study context

SMEs have a similarly important role in the Bulgarian economy. In 2023, there were 461,856 non-financial SMEs, representing 99.8% of all non-financial enterprises, contributing 61.8% of the gross value added and 74% of the employment, but having less than half the productivity of large enterprises (31.8% vs. 75.4%) (Bulgarian Small and Medium-sized Enterprises Agency (BSMEPA), 2024). SMEs actively use financial support (grants) for enhancing their digitalisation. Lack of skilled human resources is the main problem SMEs faced during 2022-2023 (BSMEPA, 2024).

Bulgaria is an emerging innovator with digitalisation performance below the EU average (47%), although increasing (European Commission, 2024). SMEs lag behind large enterprises in using digital technologies (NSI, 2023) as well as when compared to their EU counterparts – 28.4% of Bulgarian SMEs reach basic digital intensity, while in the EU this percentage is 57.7% (Eurostat, 2024).

2.2. Sample

Data for this study come from a more extensive research project. The target population included SMEs in Bulgaria. Sample acquisition was conducted by a market research firm via phone interviews and visits to the respondents' premises using a structured questionnaire. A total of 308 filled-in questionnaires were collected during October-December 2023. The descriptive statistics in Table 1 present the demographic characteristics of the sample.

Table 1. Demographic characteristics of the sample (n=308)

Firms profile	Number	Percentage
Sector (% of firms, excl. financial sector)		
Manufacturing	78	25.3
Construction	31	10.1
Commerce	99	32.1
Services	100	32.5
Size (% of SME, excl. financial sector)		
0-9 employees (micro)	106	34.4
10-49 employees (small)	103	33.4
50-249 employees (medium-sized)	99	32.1

Source: authors' representation

Most respondents (57.4%) hold top-management positions – owner, executive director, or member of the board of directors. The rest hold mid-management positions in finance, accounting, sales, or IT. Managerial positions imply that the respondents would be well aware of the digitalisation practices in the firm. Thus, their responses are expected to give valuable insights into the researched phenomena. The respondents' tenure reinforces this assumption – 78.5% worked for over 6 years in the firm.

The respondents' profile aligns with recommendations to identify experienced and knowledgeable ones when using perceptual, retrospective measures and when relying on a single informant per organisation (Hortovanyi et al., 2023; Huber & Power, 1985). Hortovanyi et al. (2023) provide evidence that senior executives usually make decisions and are responsible for digital transformation in SMEs.

2.3. Variables and measures

This study uses five composite variables, measured by indicators validated in previous publications (Table 2). All indicators were translated into Bulgarian language and transformed to a uniform 5-point Likert scale (1=completely disagree, 5=completely agree).

Table 2. Variables, indicators used, and sources

Variable, Source	Indicators used
Transformational leadership, Berghaus and Back (2016), α=0.94	• DT follows a defined strategic plan • Defined roles, responsibilities and decision-making processes • DT goals are defined measurably • Periodically review DT progress • Top management recognises the importance of DT • Middle management promotes DT projects • Senior management takes responsibility for DT
Organisational flexibility, Berghaus and Back (2016), α=0.85	• Digital product creation across all departments and functions • Operational management across digital and physical channels is aligned • Able to react quickly to changes • Pursue digital innovations alongside usual business operations • Standardised, efficient procedures for cooperation on digitalisation with external partners
Risk-tolerant culture, Berghaus and Back (2016), α=0.90	• Digital expertise as core component in developing employees • Digital competencies as important criterion in recruiting • Tolerance to risk-taking • Digital innovation developed even when financially risky • Failed digital projects are communicated in a proactive manner • Errors assessed in order to improve

Digital skills, Hortovanyi et al. (2023), α=0.88	• Employees in all departments possess the necessary digital skills* • Sufficient training related to the use of digital applications is offered • Innovation is based on digital applications data • Management supports the implementation of DT
Digital business intensity, Nwankpa and Roumani (2016), CR=0.89	• Driving new business processes built on technologies such as big data, analytics, cloud, mobile and social media platform • Integrating digital technologies such as social media, big data, analytics, cloud and mobile technologies to drive change • Business operations are shifting toward making use of digital technologies such as big data, analytics, cloud, mobile and social media platform
Firm performance**, Tippins and Sohi (2003), α=0.88 Nwankpa and Roumani (2016), CR=0.89	• Profitability • Customer retention • Sales growth

Notes: * The original scale includes two indicators distinguishing between administrative and production departments. This study combines them into one indicator
** The original scale includes a fourth indicator (Return on Investments) which was omitted in this study due to low correlation
Source: authors' representation

2.4. Analytical procedure

To identify the underlying structure and interdependence among the five variables used, the analytical procedure selected is cluster analysis. Cluster analysis allows the definition of subgroups with maximal within-group similarity while having maximal between-group heterogeneity (Hair Jr. et al., 2010). It thus helps identify homogeneous groups among the otherwise too broadly defined SME category, acknowledging its diversity.

3. Analyses and results

Data was analysed with SPSS v.25. First, the constructs' reliability, convergent validity, and discriminant validity were examined. Table 3 shows that all constructs have acceptable reliability coefficients (Cronbach's alpha>0.7) and validity (inter-item correlations between 0.3-0.9) (Hair Jr. et al., 2010). Item-total correlations have values above 0.4 for all variables, indicating that the items form well the respective scales. The composite variables were calculated as mean values of their indicators.

Table 3. Construct reliability and convergent validity

Composite variable	Range of inter-item correlations	Cronbach's alpha
DI: Digital business intensity	0.538 - 0.680	0.827
TL: Transformational leadership	0.522 - 0.775	0.929
OF: Organisational flexibility	0.488 - 0.671	0.876
RC: Risk-tolerant culture	0.410 - 0.715	0.877
DS: Digital skills	0.551 - 0.682	0.868

Source: authors' representation

The normality of the data was examined by Kolmogorov-Smirnov and Shapiro-Wilks tests, which showed that all variables were not normally distributed. Thus, Spearman's rank-order correlation was applied. Descriptive statistics and correlations are presented in Table 4 and show that all five variables are correlated ($p<0.01$).

Table 4. Descriptive statistics and variables correlations (n=308)

Composite variable	# of items	Mean	S.D.	TL	OF	RC	DS	DI
TL:Transformational leadership	7	3.1252	0.95992	1				
OF:Organisational flexibility	5	3.0565	0.95913	.843**	1			
RC:Risk-tolerant culture	6	2.9773	0.94885	.789**	.787**	1		
DS:Digital skills	4	3.1558	0.96880	.865**	.795**	.796**	1	
DI:Digital business intensity	3	1.5097	0.92747	.534**	.475**	.420**	.490**	1

** Correlation is significant at the 0.01 level (2-tailed).
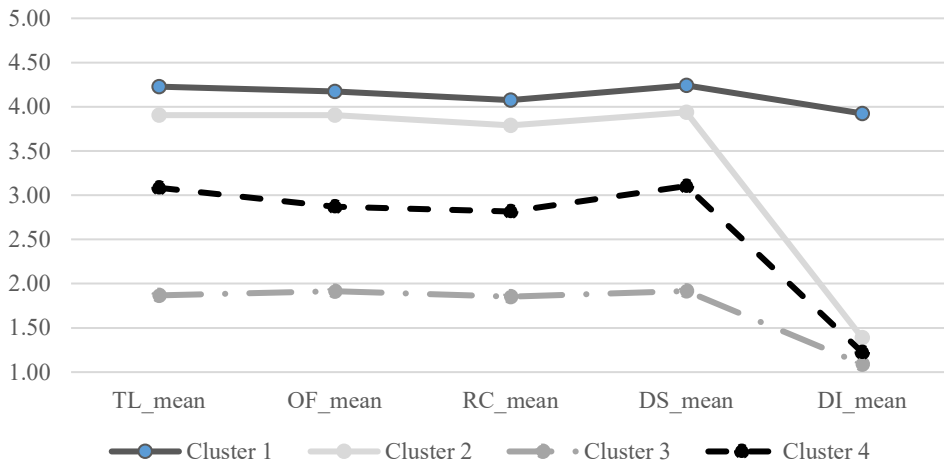Source: authors' representation

Using these variables, hierarchical and non-hierarchical cluster analyses were applied to assess possible similarities and dissimilarities between the SMEs and allow profiling and analysis of their characteristics. Hierarchical cluster analysis with Ward's method was used to evaluate a range of cluster solutions. It gave grounds to proceed with defining four clusters.

Then, a non-hierarchical cluster analysis (K-means) was performed. It specified four clusters with the aim of optimising the cluster solution by reassigning observations until maximum homogeneity within clusters is achieved. The resulting mean values per cluster are presented in Table 5. The F-values indicate that the means of all five variables are significantly different. The non-hierarchical cluster analysis results suggest that the four-cluster solution adequately discriminates the observations, thus supporting H1. The four clusters' profiles are illustrated in Figure 1 and clearly show the difference in values per cluster.

Table 5. Non-hierarchical four-cluster solution and composite variable means per cluster

Composite variable	Final Cluster Centres (M)				F	Sig.
	1	2	3	4		
TL: Transformational leadership	4.23	3.90	1.87	3.08	317.271	0.000
OF: Organisational flexibility	4.17	3.91	1.92	2.87	281.672	0.000
RC: Risk-tolerant culture	4.08	3.79	1.85	2.82	249.978	0.000
DS: Digital skills	4.24	3.94	1.92	3.10	274.291	0.000
DI: Digital business intensity	3.92	1.39	1.09	1.23	350.078	0.000
Cluster size	31	88	78	111		
% of total	10%	29%	25%	36%		

Source: authors' representation

Figure 1. Clusters profile – mean values per variable

Source: authors' representation

Examining cluster stability and validity allows further analysis and the derivation of conclusions of practical significance (Hair Jr. et al., 2010). To assess cluster stability, the data was reordered by another variable (respondent's age) and non-hierarchical analysis was performed again. The comparison of the resulting cluster solution to the initial one is presented in Table 6.

Although data ordering changes, only one observation switches cluster membership (Table 6). 99.7% of the observations retain the same cluster membership, indicating that the four-cluster solution is stable.

To assess predictive validity, a multivariate test was performed using three additional variables related to FP: profitability, sales growth, and customer retention.

Table 6. Cross-classification between the two non-hierarchical cluster solutions based on the reordering of observations

		Cluster Number (by Age of Respondent)				Total
		Cluster 1	Cluster 2	Cluster 3	Cluster 4	
Cluster Number (by ID)	Cluster 1	0	0	0	31	31
	Cluster 2	0	0	88	0	88
	Cluster 3	78	0	0	0	78
	Cluster 4	1	110	0	0	111
	Total	79	110	88	31	308

Source: authors' representation

Table 7. ANOVA model - three criteria validity variables and cluster membership

Variable	Cluster number	Mean	F	Sig.
Profitability	1	4.39	27.648	0.000
	2	4.31		
	3	3.03		
	4	3.92		
Sales growth	1	4.23	24.483	0.000
	2	4.15		
	3	2.92		
	4	3.92		
Customer retention	1	4.35	22.689	0.000
	2	4.23		
	3	3.01		
	4	3.89		

Source: authors' representation

A MANOVA model was estimated with these three indicators as dependent variables and the cluster membership as an independent variable. The overall model is significant (Wilks' Lambda for cluster membership=0.758, F=9.835, Sig.=0.000). This result supports the assumption that cluster membership can predict firm performance. The individual F-statistics are also significant ($p<0.05$). The results demonstrate that the cluster membership can predict other variables, thus providing evidence for validity (Table 7). Cluster 1 demonstrates the highest scores, while Cluster 3 – the lowest on all three FP indicators. These results support H3.

The profiles of the clusters are assessed using the demographic variables size, sector, and type of firm (independent or part of a larger group). The relationships are tested with cross-tabulation.

Table 8. Cross-classification of the four cluster solution and demographic variables

		Cluster membership				Total
		1	**2**	**3**	**4**	
Size	0-9	4	16	49	37	106
(number of	10-49	6	31	25	41	103
employees)	50-249	21	41	4	33	99
Total (χ2=67.453; df=6, Asympt. Sig.=0.000)		31	88	78	111	308
Sector	Manufacturing	13	17	19	29	78
	Construction	3	8	9	11	31
	Commerce	9	29	24	37	99
	Services	6	34	26	34	100
Total (χ2=7.959; df=9, Asympt. Sig.=0.538)		31	88	78	111	308
Type	Independent	26	83	77	105	291
	Part of a Bulgarian-owned group	1	5	1	4	11
	Part of a foreign-owned group	4	0	0	2	6
Total (χ2=25.115; df=6, Asympt. Sig.=0.000)		31	88	78	111	308

Source: authors' representation

The size and type of firm show statistically significant relationships to cluster membership (Table 8) and can be used to profile the clusters. In this sample, the sector does not have a statistically significant relation to cluster membership. Thus, H2 is partially confirmed. Although independent firms are the majority in each cluster, their share is smallest within Cluster 1 (84%) and largest within Cluster 3 (99%). Contrary to that, the share of SMEs which are part of foreign groups is largest in Cluster 1 (13%), and zero in Clusters 2 and 3.

Cluster 1 exhibits the highest values for all five variables. This cluster is expectedly the smallest (10% of the sample). 68% of the firms in this cluster are medium-sized. They also report the highest score for all three FP indicators: profitability, sales growth, and customer retention.

Cluster 2 scores close to Cluster 1 along TL, OF, RC, and DS. A more notable difference is observed along the DI variable. Cluster 2 score for DI (1.39) is much closer to the next two clusters - 4 (1.23) and 3 (1.09) than to Cluster 1 (3.92). This suggests that somewhat lower performance on the first four variables might be associated with a larger difference in the ability of the firm to channel the strategic organisational investment in emerging and innovative digital technologies. This cluster is about a third of the sample (29%). Medium-sized firms are also the largest group (47%), followed by small firms (35%).

Cluster 4 scores along TL, OF, RC, and DS are further from Cluster 2 and much closer to Cluster 3. Yet, as with Cluster 2, this corresponds to a much lower score along the DI variable. This cluster is slightly above a third of the sample (36%). Shares of micro (33%), small (37%), and medium-sized (30%) firms within the cluster are comparable.

Cluster 3 performs the worst on all five variables – TL, OF, RC, DS, and DI. This cluster includes 25% of the firms in the sample. It is dominated by micro (63%) and small (32%) firms. They also report the lowest score on all three FP indicators.

4. Discussion

Cluster analysis results suggest that the five composite variables can be used to describe the capabilities of SMEs to successfully deal with digital transformation challenges and implement the associated organisational changes. The ability to change and implement DT (represented by transformational leadership, organisational flexibility, risk-tolerant culture, digital skills and digital business intensity) is related to better firm performance (measured by profitability, sales growth and customer retention).

Cluster 1 exhibits the highest scores on all five variables. These firms are successfully implementing digital transformation and changes which, importantly, come with the highest scores for firm performance. Such a conclusion aligns with previous research findings that report a positive relationship between DT and FP (Luo & Yu, 2022; Tarutė et al., 2018). Cluster 3 performs the worst on all five variables and shows the worst firm performance. Clusters 2 and 4 rank in the middle, with the most notable difference along the digital business intensity variable. This suggests that even small differences in the other four variables' scores relate to prominent differences in the digital business intensity scores and to worse firm performance. Such a finding aligns with Zhang et al. (2022), who demonstrate empirically that organisational capabilities have a positive impact and are key success factors for DT, and not IT infrastructure or management directly.

Cluster 1 encompasses the smallest share of the studied SMEs. On the other hand, the share of firms that perform worst on all five variables (Cluster 3) is a quarter of the sample. Most of the firms belong to the in-between range (Clusters 2 and 4) along the studied variables, which is also reflected in their performance. This suggests that Bulgarian SMEs are still struggling with DT. Similar findings are presented in other studies in the country. Only 8% of Bulgarian firms report high levels of digitalisation, with SMEs in particular lagging behind (Bulgarian Industrial Association (BIA), 2023); most of the firms are in the initial or medium phases of digitalisation (Siemens & AHK Bulgarie, 2021).

Looking at the demographic variables that describe the clusters, a noteworthy conclusion is that larger SMEs apparently do better than smaller ones. Medium-sized enterprises are better equipped with the transformational leadership, organisational processes, culture, and attention to skills necessary to drive change and DT. Micro enterprises, on the other hand, dominate the worst-performing Cluster 3. This suggests that size indeed matters. A smaller size indicates heavier resource constraints, but as this study suggests – accompanied by less focus on building capabilities to drive the organisational changes associated with DT. This finding

aligns with Raimo et al. (2021), whose results show that the largest, most profitable SMEs in Italy are doing better in digitalising their processes. Contradictory results, however, are reported by Eller et al. (2020), who do not find a significant effect of SME size on digitalisation and financial performance of SMEs in Austria.

In this sample, the sector has no statistically significant relationship to the cluster membership. This contradicts previous research. Other authors suggest that the levels of digital transformation vary between sectors, possible explanations being differences in consumer needs and industry maturity (Tarutė et al., 2018).

The importance of high TL scores for the success in implementing DT is a well-supported finding in previous literature (Luo & Yu, 2022; Zhang et al., 2022). Leadership in SMEs is even more important as the attention of executive management is limited (Dörr et al., 2023), while the strategic decisions are mainly made by owners/top managers. SMEs whose owners/managers realise the importance of DT, embed it into the strategy and support it with a clear definition of roles and goals are the ones that succeed in it.

High scores for organisational flexibility reflect the involvement of all units and functions in the creation of digital products, synchronisation of operational management across channels, and effective cooperation with external partners. These firms can quickly react to changes and pursue digital innovations along with their usual business operations. Culture tolerates risks, and failures are discussed openly to learn from mistakes and improve. This study's results align with extant research. Adriansyah and Afiff (2015) find empirical evidence that externally-oriented, risk-taking cultures that value flexibility promote innovation and competitive advantage. Shahzad et al. (2017) report empirical results showing that organisational culture that supports flexibility and change is related to product and process innovations, and financial performance.

When the necessary digital skills are present in all departments and enough training is provided, SMEs seem to do better in their DT efforts. Organisations that promote acquiring, developing and sharing new knowledge are more likely to adapt to changes in their environment (Montreuil et al., 2021). On the other hand, the majority of SMEs in Bulgaria face difficulties in developing and keeping up-to-date their digital skills. Other studies also cite digital skills as one of the main barriers to digitalisation. There are reports that between 50% (Siemens & AHK Bulgarie, 2021) and 68% (BIA, 2023) of firms in Bulgaria indicate a lack of digital skills as the most important barrier.

High scores for digital business intensity point to the use of DT in business processes and their role in driving change. Such firms successfully embed investments in digital technologies in their strategies. As demonstrated above, even small differences in the other four variables' scores relate to notable differences in DI scores, suggesting its pivotal role. These results reinforce previous research findings that DI helps firms be better positioned to utilise digital technologies (Nwankpa & Datta, 2017) and organisational capabilities to achieve superior

performance. Nwankpa et al. (2022) demonstrate empirically that digital business intensity drives the ability of a firm to implement novel processes in response to change imperatives (operational process innovation), while a change of existing processes is an important requirement for DT (Schaarschmidt & Bertram, 2020).

Conclusions

Digital transformation is a major organisational change triggered and shaped by digital technologies. DT is an iterative process (Barann et al., 2019) and should rather be approached as a journey, not a single, time-bounded project. The organisational capabilities required for this journey largely correspond to those needed for transformative and continuous changes.

This study's results demonstrate that SMEs that maintain transformational leadership practices, enough flexibility in their organisational structure, a culture that tolerates risk-taking, and the necessary level of digital skills across the departments also score higher on digital business intensity. These firms report the highest firm performance in terms of three important metrics - profitability, sales growth, and customer retention. A small decrease in TL, OF, RC and DS is associated with a larger decrease in DI; FP also declines. Medium-sized enterprises seem to do better in building these organisational capabilities. Possible explanations lie in their expected higher levels of resources and maturity in defining strategic organisational processes that allow for developing skills and transformational leadership practices. Such maturity often comes with growth.

This paper has several implications for theory. First, the study adds to the literature on SME digital transformation interpreted as a transformative and continuous change. Treating DT as an organisational change shifts the focus from understanding technologies to understanding how people adopt and use them to improve competitiveness in dynamic environments. The study adds to the body of OC research related to the adoption of digital technologies in SMEs (Bordeleau & Felden, 2019). It provides evidence of the importance of five organisational capabilities that relate to SME advancement in DT and firm performance, while few studies report performance consequences of DT (De Mattos et al., 2023). Second, the results support extant literature that SME size matters (Dörr et al., 2023; Raimo et al., 2021) and larger SMEs are much better positioned than micro firms in implementing DT. SMEs are indeed too large a category, and treating them as a homogeneous group risks missing important differences. Third, it provides additional evidence in support of the pivotal role of strategic organisational investment in emerging and innovative digital technologies.

As a practical contribution, this study's findings may help SME managers/owners enhance chances for successful DT by adopting a long-term focus on building the necessary organisational capabilities. The importance of transformational leadership, organisational flexibility, risk-tolerant culture, digital

skills, and digital business intensity is reinforced. High scores on these variables are associated with better firm performance. SMEs that undertake digital transformation should assess, build, and maintain these capabilities to increase chances for success.

The results of this study support the imperative for SME owners/managers to focus on transformational leadership practices when implementing DT. The ones who do not fare well in this dimension lag behind, which is reflected in their firm performance as well. A culture that promotes creativity, initiative, and risk-taking is pivotal to the adoption of innovative behaviour (Montreuil et al., 2021) and thus adds to the organisational capabilities needed to change successfully in response to challenges, DT included. SMEs should use their characteristics, such as less complex hierarchical processes, to foster DT. This is specifically important for smaller SMEs who rank lower on their DT, and whose owners/managers might be even more challenged to focus on strategic decisions and building organisational capabilities. The results suggest these SMEs may need government support to develop digital skills, necessary to remain and succeed in the competitive market, and build the capabilities needed for DT. Such support should be tailoured to consider the specificities and divergent requirements of the larger and smaller SMEs.

This study has its limitations, which impact the generalisability of the findings and provide directions for future research. It uses cross-sectional data. In addition, it relies on a single informant per SME. A longitudinal study could reveal the dynamism of the organisational capabilities and their interrelationship. Including lower hierarchical levels of respondents could give an additional perspective on how the firms perform along the studied variables. Future research could explore how these capabilities influence the competitive advantage of firms in relation to digital transformation. As this study is completed in one national context, a cross-country sample could also help increase its generalisability.

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