SOCIAL AND BEHAVIORAL SCIENCES. Health Care Sciences

ORIGINAL RESEARCH

Digitalisation Factors Influencing the Dynamic Capabilities of Small and Medium Enterprises in the Healthcare Sector

Authors' Contribution:
A – Study design;
B – Data collection;
C – Statistical analysis;
D – Data interpretation;
E – Manuscript preparation;
F – Literature search;
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Abstract

Background and Aim of Study:
Digitalization is problematized as one of the ways to improve dynamic capabilities of healthcare sector small and medium enterprises (SMEs) in their strive to stay competitive in today's digital society. Digitalisation and dynamic capability are current key issues in both academia and practice due to the recent advances in information and communication technologies. Nonetheless, there is inadequate research informing what and why digitalisation can be leveraged to enhance the dynamic capabilities (DC), in the context of SMEs in healthcare sector.
The aim of the study: to explore and explain factors influencing DC of healthcare SMEs in South Africa.

Material and Methods:
The study employed task-technology fit theory as a lens to explain digitalisation factors influencing the DC of SMEs. To achieve the aim of the study, a deductive approach was followed. The study population was healthcare sector SMEs, in South Africa. The sampling frame was 384 randomly selected SMEs, in a self-administered survey.

Results:
The empirical results show that SME performance ($\beta=0.132$, $p<0.05$), task-technology fit ($\beta=0.052$, $p<0.05$), internet access ($\beta=0.235$, $p<0.05$), customer service ($\beta=0.057$, $p<0.05$), information sharing ($\beta=0.022$, $p<0.05$), innovation ($\beta=0.125$, $p<0.05$), and data security ($\beta=0.427$, $p<0.05$) are highly significant in the digitalisation of DC of SMEs. While cost saving ($\beta=0.178$, $p>0.05$) was found to be less significant.

Conclusions:
The study has explained and shown that appropriating technology to task during digitalisation is key to enhancing dynamic capabilities, in the context of South African healthcare sector SMEs. The cost of digital technology is a none factor. Subsequently, digitalization is a people-driven transformation journey.

Keywords:
digitalisation, dynamic capabilities, task-technology fit, small and medium enterprises, healthcare sector, South Africa.

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Introduction

In the epoch of digital technologies (DTs), both academics and practitioners have strongly been advocating for the value of achieving dynamic capabilities (e.g., Ozanne et al., 2022). Along the same lines, a plethora of research (e.g., Bolosha et al., 2022; Fatoki, 2021; Gaglio et al., 2022; Matekenya & Moyo, 2022; Rashidirad & Salimian, 2020) posit that achieving dynamic capabilities requires an inclusive digital strategy. This paper argues that there is a need to enhance the dynamic capabilities (DC) of Small and Medium Enterprises (SMEs) to contribute to economic expansion (Khurana et al., 2022; Matarazzo et al., 2021; Suhendi et al., 2020). As emphasized by Farida and Setiawan (2022); Weaven et al. (2021), it is substantial that SMEs in developing nations enhance the DC to attain a competitive edge (Owoseni & Twinomurinzi, 2019) and to compete with multinational enterprises in the emerging digital world (Achieng & Malatji, 2022; Suhendi et al., 2020).

Baloyi and Khanyile (2020) alluded that the substantial role of SMEs as the lubricants of economic expansion in South Africa has largely been recognized. Sibiya et al. (2023) and Tshwete (2020) have shown the substantial role of SMEs in eliminating poverty, creating job opportunities (Mashavira et al., 2022) and enhancing economic expansion (Loury-Okoumba & Mafini, 2021; Masocha, 2019; van Staden, 2022). Several government agencies in South Africa such as the Department of Trade and Industry (DTI), SEDA, the Department of Small Business Development (DSBD), the National Empowerment Fund (NEF), and the Small Enterprise Finance Agency (SEFA) prioritize support for SMEs (Kelly et al., 2021). According to Sibiya et al. (2023), the number of registered SMEs in South Africa during the first quarter of 2021 was projected to be close to 2.3 million (SEDA, 2021). Baloyi and Khanyile (2020) state that SMEs play a substantial role in the economy as they make up 95.0% of businesses, which contributes 60.0% to job creation (Venter & Hayidakis, 2021) and around 45.0–50.0% of South Africa's Gross Domestic Product (GDP) (Loury-Okoumba & Mafini, 2021; Mashavira et al., 2022; Matekenya & Moyo, 2022). Furthermore, a report by the National Planning Commission (2020) has documented that SMEs in South Africa will create 90.0% of new job opportunities by 2030 (Kelly et al., 2021; Matekenya & Moyo, 2022). Nonetheless, many scholars (e.g., Mhlongo & Daya, 2023; Sibiya et al., 2023) have identified a plethora of challenges preventing the expansion of SMEs in South Africa.

A growing body of literature on SME growth has shown that a lack of digital technologies (Bvuma & Marnewick, 2020), poor infrastructure (Loury-Okoumba & Mafini, 2021; Sibiya et al., 2023) and limited access to technology (Kademeteme & Twinomurinzi, 2019), are the major reasons that prevent SMEs from enhancing their DC (Hermawati & Gunawan, 2019). Extant research (e.g., Mashal & Morrish, 2023; Raimo et al., 2023) suggest that SMEs may resort to digitalisation to tackle their challenges to enhance the DC (Khurana et al., 2022). Digitalisation has become popular among SMEs, particularly in the healthcare sector (Mashal & Morrish, 2023; Raimo et al., 2023). In support of the above viewpoint, a report published by Deloitte UK's Centre for Health Solution (2020) state that about 65.0% of SMEs in the healthcare sector have increased the adoption of DT (Mashal & Morrish, 2023; Raimo et al., 2023). Recent scholarly work by Moretti et al. (2023) defines digitalization as the process of converting information into digital format.

In a broader context, a plethora of research (Moretti et al., 2023) refers to digitalisation as the process of combining DTs into everyday life (Warner & Wäger, 2019), business processes and enterprises (Achieng & Malatji, 2022). Recent scholarly works found that digitalisation can enable SMEs in the healthcare sector to improve health services (Raimo et al., 2023), reduce cost (Moretti et al., 2023), reduce health inequalities (Saifudin et al., 2021), gain access to electronic health records (Spanò et al., 2023), provide services to patients (Cerchione et al., 2023) and allow healthcare providers to monitor patient's vital signs (Balta et al., 2021). A growing body of literature on DTs (Khurana et al., 2022; Moretti et al., 2023) has shown that digitalisation can enhance SMEs' DC (Raimo et al., 2023; Warner & Wäger, 2019). In the emerging digital world and with the scarcity of resources (Moretti et al., 2023), budget constraints (Sumaili et al., 2018), and limited opportunities to directly influence the market structure (Schoemaker et al., 2018), DC is an important set of capabilities that SMEs should have because it will enable them to quickly detect market changes before rivals do (Engelmann, 2024).

Engelmann (2024) states that the development of DC among SMEs relies on sensing, seizing, and reconfiguring (Khan et al., 2021). Firstly, sensing capabilities explain the evaluation of opportunities that are available in the market (Engelmann, 2024); with DTs helping SMEs to sense as they can identify opportunities such as discovering and collaborating with patients on the internet (Spanò et al., 2023). Secondly, seizing capabilities entails enterprises' reaction to market requirements to reduce cost (Engelmann, 2024; Khan et al., 2021). DTs can help SMEs in the healthcare sector seize the opportunity of doing business on the Internet at a lower cost (Raimo et al., 2023; Suhendi et al., 2020; Warner & Wäger, 2019). Lastly, reconfiguring capabilities is the development of new enterprises' capabilities to support new business models (Engelmann, 2024).

Scholarly literature on DC (e.g., Khurana et al., 2022; Zamani et al., 2022) state that the development of business models among enterprises is integral to creating sustainable growth (Engelmann, 2024; Khan et al., 2021). Along the same lines, empirical studies conducted on DC (Engelmann, 2024; Warner & Wäger, 2019) have argued that SMEs must develop new business models to provide services to customers (Zamani et al., 2022). DTs can enable SMEs in the Healthcare sector to provide services to their patients on

the internet (North et al., 2020; Raimo et al., 2023; Spanò et al., 2023).

The aim of the study. To explore and explain digitalisation factors influencing the DC of SMEs in the healthcare sector.

To realize the aim, the research question was formulated as what are the digitalisation factors influencing the DC of SMEs in the healthcare sector?

Materials and Methods

As the aim of this present study was to explore and explain digitalisation factors influencing the DC of SMEs in the healthcare sector, a deductive research approach was followed. A sampling frame was acquired through the South African Small Enterprise Development Agency (SEDA). According to a survey undertaken by SEDA (2021), the number of registered SMEs, including those in the healthcare sector, in the Gauteng province of South Africa during the first quarter of 2021 was 786,027. The study sample size was, therefore 384. This sample size is in line with Krejcie and Morgan (1970) who stated that a population that is between 75,000 and 1,000,000 is well represented by a sample size of 384.

The present study was cross-sectional in nature since data collection only occurred at one specific point in time. A self-administered survey questionnaire was employed to obtain data from the SMEs operating in Gauteng province. A total of 500 survey questionnaires were sent to 500 SMEs operating in the Healthcare sector. Of the 500 questionnaires, only 300 were returned. This meant a response rate of 60.0%, which is

considered to be a good return (Salah & Ayyash, 2023). The collected data were analyzed using SPSS version 28. A reliability test was also conducted in this present study. Scholarly work by Hall et al. (2023) states that the prime reason for conducting a reliability test is to examine the level of consistency of the survey questionnaire. A plethora of research (e.g., Dzomonda & Fatoki, 2019; Martinez-Corona et al., 2020) has indicated that a questionnaire is considered reliable if Cronbach's alpha (CA) is greater or equal to 0.7 (Cheung et al., 2023; Ogujiuba et al., 2023). As documented in Table 1, Cronbach's alpha was determined to be 0.886, which is considered excellent, since it exceeded the recommended value of 0.7.

Table 1
Reliability Result of the Data Collection Instrument

Reliability results		
Cronbach's alpha	Cronbach's alpha based on standardized items	Number of items
0.886	0.886	78

The present study was designed as a cross-sectional study envisioned obtaining data from five hundred (500) SMEs operating in the Healthcare sector. Three hundred (300) responded accordingly. Table 2 presents the demographical statistics of respondents. The demographic variables include gender, age (years), education, job position, sector, use of DTs, and types of DTs used.

Table 2
Demographical Statistics of Respondents

Variables		Frequency		
		Person	Percentage	Cumulative percentage
Gender	Male	187	63.3	63.3
	Female	113	37.7	100.0
	Total	300	100.0	-
Age (years)	20 – 30	222	74.0	74.0
	41 – 50	64	21.3	95.3
	Above 50	14	4.7	100.0
	Total	300	100.0	-
Education	Matric	20	6.7	6.7
	Diploma	46	15.3	22.0
	B-tech	170	56.7	78.7
	Master's	58	19.3	98.0
	PhD	6	2.0	100.0
	Total	300	100.0	-
Job position	SME manager	300	100.0	100.0
	Total	300	100.0	-
Sector	Healthcare	300	100.0	100.0
	Total	300	100.0	-
Use of DTs	Yes	264	88.0	88.0
	No	36	12.0	100.0
	Total	300	100.0	-
Types of DTs used	Facebook	64	21.3	21.3
	WhatsApp	222	74.0	95.3
	X (Twitter)	14	4.7	100.0
	Total	300	100.0	-

As shown in Table 63.3% (187) of participants representing healthcare SMEs were males, whilst 37.7% (113) were females. Furthermore, the findings in Table 2 reveal that 74.0% (222) of participants were between the ages of 20 to 30, 21.3% (64) were between 41 to 50 and 4.7% (14) were above 50 years. Regarding education, 56.7% (170) of participants had a B-tech, followed by 19.3% (58) who had a master's, 15.3% (46) had a diploma, 6.7% (20) had a matric and only 2.0% (6) had a PhD. Concerning job position, Table 2 shows that 100% (300) of participants were SMEs managers.

Moreover, the results in Table 2 show that 100.0% (300) of SMEs operate in the healthcare sector. Concerning the use of digital technologies (DT), 88.0% (264) of participants revealed that they are using DTs, whilst 12.0% (36) alluded that they are not using DTs.

Furthermore, Table 2 shows that 74.0% (222) of participants use WhatsApp, 21.3% (64) use Facebook, and 4.7% (14) use X (formerly Twitter).

Regression Analysis

At this stage, regression analysis was utilised to evaluate the degree to which INO, FPM CSE, SHI, DST, IEA, COS, and TTF influence the digitalisation of SMEs to improve the DC of SMEs in the Healthcare sector. As shown in Table 3, the regression findings show a significant value of 0.000, implying that the regression model can be used for the digitisation of SMEs to improve the DC. In this present study, the predictor variable accounts for 68.1% of the variance in the digitalisation of SMEs in the healthcare sector to improve the DC and the adjusted R Square (R^2) equals=0.681.

Table 3

*Regression Statistics**

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.117	0.021	-	0.052	0.000	-	-
INO	0.125	0.195	0.248	0.125	0.022	0.154	2.453
FPM	0.132	0.183	0.256	1.144	0.000	0.178	1.027
CSE	0.057	0.172	0.174	0.182	0.014	0.352	3.117
SHI	0.022	0.126	0.143	3.122	0.003	0.221	1.120
DST	0.427	0.272	0.177	0.172	0.000	0.248	2.026
IEA	0.235	0.175	0.247	1.665	0.032	0.332	2.049
COS	0.178	0.195	-0.423	0.186	0.687	0.172	1.125
TTF	0.052	0.218	0.200	1.208	0.002	0.118	2.110

Note. *Dependent variable – Digitalisation of SMEs to improve the DC; INO – innovation; FPM – firm performance; CSE – customer service; SHI – sharing information; DST – data security; IEA – internet access; COS – cost savings; TTF – task-technology fit.

As displayed in Table 3, the results show that INO (β=0.125, p<0.05), FPM (β=0.132, p<0.05), and CSE (β=0.057, p<0.05) hypotheses positively influence the digitalisation of SMEs to improve the DC. Along the same lines, this present study confirmed that SHI (β=0.022, p<0.05) and DST (β=0.427, p<0.05) have a positive effect on the digitisation of SMEs to improve the DC. Furthermore, the study proved that IEA (β=0.235, p<0.05) and TTF (β=0.052, p<0.05) hypotheses positively influence the digitalisation of SMEs to improve the DC. However, this present study

found that one factor has a negative influence on the digitalisation of SMEs to improve the DC, namely, COS (β=0.178, p>0.05).

The results demonstrated in Table 4 indicate that seven (7) hypotheses (H1, H2, H3, H4, H5, H6, and H8) are supported, whilst H7 is not supported. To check if there is an existence of multi-collinearity, this present study employed the Variance Inflation Factor (VIF). As depicted in Table 3, all the VIF numbers were below 5, which implies that there is no existence of multi-collinearity.

Table 4

Hypotheses Testing

Hypotheses	Constructs	Std. Beta (β)	p-values	Decision
H1	INO	0.125	0.022*	Supported
H2	FPM	0.132	0.000*	Supported
H3	CSE	0.057	0.014*	Supported
H4	SHI	0.022	0.003*	Supported
H5	DST	0.427	0.000*	Supported
H6	IEA	0.235	0.032*	Supported
H7	COS	0.178	0.687**	Not supported
H8	TTF	0.052	0.013*	Supported

Note. *p<0.05; **p<0.01; INO – innovation; FPM – firm performance; CSE – customer service; SHI – sharing information; DST – data security; IEA – internet access; COS – cost savings; TTF – task-technology fit.

Results and Discussion

The model (Figure 1) shows factors that are significant to digitalization with respect to improving dynamic capabilities of South African healthcare sector SMEs.
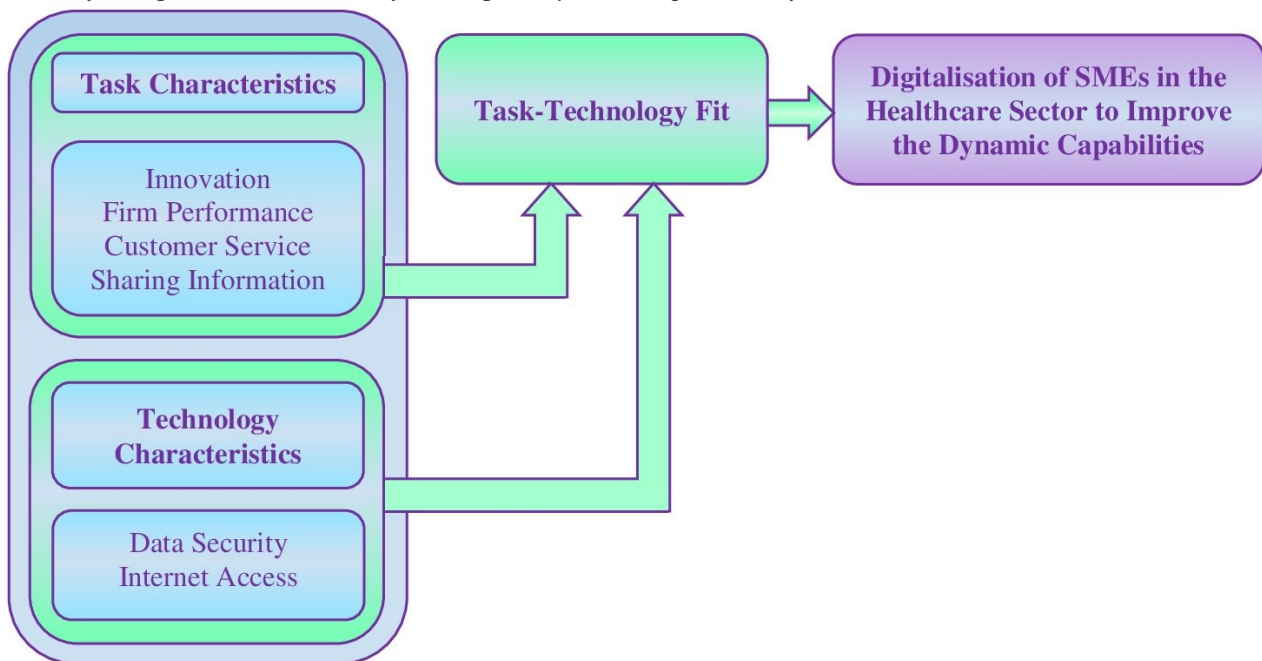
Task Characteristics

As shown in Table 4, INO ($p=0.022<0.05$) has a positive effect on the digitalisation of SMEs to improve the DC. This outcome is consistent with Raghavan et al. (2021), who stated that DTs such as Cloud Computing can help SMEs in the Healthcare sector become innovative by sharing information and communicating with patients on the internet (Arega & Sharma, 2023). Also, the present study proved that FPM ($p=0.000<0.05$) has a positive effect on the digitalisation of SMEs. This result is in line with Vishwakarma et al. (2023), who stated that

DTs, for example, artificial intelligence (AI) can enable SMEs in the healthcare sector to refine patient treatment, enhance firm performance (Gautam et al., 2022), and improve the DC (Drydakis, 2022). The positive effect of CSE ($p=0.014<0.05$) on the digitalisation of SMEs is also confirmed. In support of this result, several scholars (Cerchione et al., 2023; Spanò et al., 2023) state that DT can enable SMEs in the healthcare sector to improve customer service (Vishwakarma et al., 2023). Similarly, the present study proved that SHI ($p=0.003<0.05$) has a positive effect on the digitalisation of SMEs. This result is in line with Spanò et al., (2023) who alluded that DTs can enable SMEs in the healthcare sector to share information with patients (Engelmann, 2024).

Figure 1

A Model for Digitalisation Factors Influencing the Dynamic Capabilities of SMEs in Healthcare Sector

Technology Characteristics

As shown in Table 4, DST ($p=0.000<0.05$) has a positive effect on the digitalisation of SMEs. This result is supported by Benzidia et al. (2021), who found that DTs can enable SMEs in the healthcare sector to protect the data of patients by implementing security measures (Raghavan et al., 2021). The positive effect of IEA ($p=0.014<0.05$) on the digitalisation of SMEs is also confirmed. As emphasized by Spanò et al. (2023) and Vishwakarma et al. (2023) DTs enable SMEs in the healthcare sector to collaborate with their patients on the Internet (Arega & Sharma, 2023). However, the present study found that COS ($p=0.687>0.05$) has a negative effect on the digitalisation of SMEs. This result is in line with Khurana et al. (2022), who found that DTs are not easy to adopt, because SMEs take time to replace old technologies with new ones.

Task-Technology Fit

On the other hand, the present study found that TTF ($p=0.013<0.05$) has a positive effect on the digitalisation of SMEs. In support of this result, Wang et al. (2019)

state that TTF plays a substantial role in the use of Big Data Analytics (BDA) in mobile cloud healthcare system. And by the same token, this paper has shown that TTF is an appropriate theoretical lens to help explain digitalization and dynamic capability in the healthcare sector SMEs.

Conclusions

In this paper, digitalization was problematized as one of the ways to improve dynamic capabilities of healthcare sector Small and Medium Enterprises in their strive to stay competitive in today's digital society. This paper has explained and shown that appropriating technology to task during digitalization is key to enhancing dynamic capabilities, in the context of South African healthcare sector SMEs. The cost of digital technology is a none factor influencing the digitalization process. Subsequently, digitalisation is a people-driven transformation journey. The paper argues that customer service, innovation, SME performance, and sharing of information play a positive role on the digitalisation

journey of SMEs. Access to Internet, task-technology fit, and data security are also significant factors. On the other hand, saving costs plays a negative role in the digitalisation process. This paper concludes that digitalisation accompanied by good infrastructure, financing, and unlimited access to technology is key to improving dynamic capabilities of healthcare sector SMEs.

Ethical Approval
The study obtained ethical clearance from the institution's Ethics Committee (Ref NO. FCRE/ICT/2022/03/001 (1).

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