

## RESEARCH ARTICLE

WILEY

# How do digital technologies influence the dynamic capabilities of micro and small businesses in a pandemic and low-income country context?

Adebowale Owoseni<sup>1</sup>  | Sylvester Hatsu<sup>2</sup>  | Adedamola Tolani<sup>3</sup> 

<sup>1</sup>School of Computer Science and Informatics, De Montfort University, Leicester, UK

<sup>2</sup>Department of Computer Science, Accra Technical University, Accra, Ghana

<sup>3</sup>Department of Information Systems, AppZone Limited, Lagos, Nigeria

## Correspondence

Adebowale Owoseni, School of Computer Science and Informatics, De Montfort University, Leicester, UK.

Email: adebowale.owoseni@gmail.com

## Abstract

It is not clear how extreme disruptions like COVID-19 pandemic affects the dynamic capabilities (DCs) of micro and small businesses (MSBs) in the context of low-income countries. Therefore, this study makes sense of how MSBs leverage DCs through digital technologies (DTs). Using mixed-method and interpretive research approaches, the first phase of the study applied a deductive coding technique to analyze interviews from 30 MSB managers in Ghana. Coding activities revealed 21 DC constructs of MSBs in Ghana. Next, we *contextualized* and *simplified* the DC framework by proposing an *interpretive* blueprint of DC framework applicable to Ghana and other low-income countries. The second phase, through a questionnaire, progressed the research by assessing how DTs influence the 21 DC constructs. Findings suggest that *collective* DCs of MSBs as a business sector did not change in a pandemic situation; nonetheless, the extent to which MSBs demonstrate DCs increased by up to 82%; and the use of DTs such as mobile payment and social media tools increased significantly. *Interpretive reflections* on the research outcomes argued that whilst the collective DCs of MSBs remain the same, each MSB uniquely explored opportunities by manifesting different combinations of DC constructs and DTs, at varying extents, and the knowledge of how MSB combines DCs could promote MSB management and digital innovation as low-income countries seek to recover from the COVID-19 economic downturn. Consequently, this research extends literature and progresses the UN sustainable development goals 8.3 as it helps to enhance policies that promote digital innovation, entrepreneurship, and growth of MSBs.

## KEYWORDS

COVID-19 pandemic, digital technology, dynamic capabilities, micro and small business

## 1 | INTRODUCTION

The COVID-19 pandemic situation, although undesirable, presents opportunities to re-examine the appropriateness of frameworks and theories, such as the dynamic capability (DC) framework that shapes strategic management of businesses (Sein, 2020). The DC framework makes sense of how businesses respond to rapid and unpredictable changes, often triggered by economic, political, technological, social, religious, and cultural factors (Matarazzo et al., 2021; Mitreğa & Choi, 2021). Extant literature suggests dynamic capabilities are tacit enablers of businesses (Kuria & Kitenga, 2014; Teece, 2012). Through DCs, businesses could develop a ubiquitous response towards regulating their resources in ways that

protect them from negative impacts of rapidly changing business environments (Albort-Morant et al., 2017). However, it is not evident how COVID-19 affects the dynamic capabilities of micro and small businesses (MSBs) in low-income countries. In recent times, the pandemic seems to be questioning the knowledge of the DC framework; it is stretching the practicality and effectiveness of DCs at helping MSBs to navigate pandemic motivated disruptions in a low-income country setting.

From another perspective, there are facts to support the increased use of digital technologies (DTs) by MSBs during the COVID-19 pandemic (Priyono et al., 2020); but there is limited knowledge regarding the use of DTs for DC and for managing business in *extreme* situations such as a pandemic (Papadopoulos et al., 2020). For instance, in a study that considered the entrepreneurial ecosystem of small businesses during COVID-19 (Rashid & Ratten, 2021), the sensing, seizing, and transforming dimensions of DCs were identified; but the study did not clarify how these dimensions handshake DTs in ways that further interpret the DC framework. Given its importance to businesses in an uncertain situation, the DC framework should be simplified, and contextualized to contemporary local businesses. The knowledge of how the DC framework could be made operational for entrepreneurs and MSBs deserves the attention of researchers. Motivated by the need to support MSBs and help them to navigate the post-COVID challenges, this study *interprets and simplifies* the DC framework by creating a blueprint that clearly suggests how firms such as MSBs could leverage the DC framework in real-world situations.

Thus, to satisfy the aforementioned gaps, this study sought answers to two research questions:

**RQ1.** : How can the dynamic capability framework be interpreted in practice and in the context of the micro and small businesses, and low-income country?

**RQ2.** : How do digital technologies influence dynamic capabilities of micro and small businesses in a low-income country and pandemic situations?

The research considers Ghana as a low-income country, with the selection of Ghana being justified by its inclusion in the OECD's Development Assistance Committee's (DAC) list of low-income countries (OECD, 2021). Moreover, the subject of MSBs is especially important because they constitute more than 85% of businesses in low-income countries such as Ghana, and they create more than 90% of the jobs (Amankwah-Amoah et al., 2018). These numbers imply that effective MSBs management has direct implications for reducing poverty, hunger, unemployment, and inequality, which could have direct relationships with the development of MSBs (United Nations, 2020). When MSBs succeed, employment will be created, wealth will be generated, and hunger could reduce (OECD, 1996).

This study could draw attention of researchers, MSB entrepreneurs, small business managers, and policy makers who are seeking ways to efficiently recover from COVID-19 economically. Answers to RQ1 and RQ2 will extend literature, and could make it easier for policy makers to adopt and adapt the DC framework into existing policy strategies, including the UN Sustainable Development Goals (SDGs) 8 that speaks to entrepreneurship development (OECD, 2020). We organized the remaining aspects of this paper as follows: insight into the economic background of Ghana, and the impact of the COVID-19 pandemic. Next, the underpinning literature on DC, small business, and digital technology was addressed, followed by a presentation of the research approach, results, and discussion. We concluded with the reflections and implications of the results on literature, policies, and strategic management of MSBs.

## 2 | THE ECONOMIC OUTLOOK OF GHANA AND COVID-19 PANDEMIC

### 2.1 | Ghana: A low-income economy

Ghana is a West African country with a population of 31.1 million (about the population of California) and Accra is the capital city of Ghana. According to International Monetary Fund (IMF), Ghana was the 16th fastest growing economy in the world based on projections that considered the compounded annual growth rate (CAGR) from 2013 through to 2017. Ghana's economy is sustained by agriculture, which contributes 40% of the human resources (Amoah, 2020) and accounts for 39% of total GDP; closely followed by the services sector and manufacturing, which makes 35% and 26% of the total GDP, respectively. Ghana had previously experienced inconsistent economic growth typical of a low-income country: in 2009, Ghana registered a GDP rise of 7.2%, which grew to 15% in 2011 and declined consistently until 2015. The economy went north from 2016 and contracted again in 2018. Ghana had been experiencing steady minimal growth from 2019 until the second quarter of 2020 when it recorded a 3.2% decline due to the COVID-19 pandemic (MacroTrends, 2020).

Labour statistics in Ghana suggest that 13.8% of the workforce is employed in public institutions, including government parastatals. In the private sector, 15.3% have jobs with formal private firms, while 69.7% are with informal private businesses, which are also service-oriented. Total unemployment, youth unemployment, and labour force participation (LFP) rates in 2019 were 4.33%, 9.16%, and 41.25%, respectively. LFP measures the number of people aged 15–24 who are economically active (Ghana Statistics Services, 2020). The infrastructural deficiencies such as

good roads, housing and health, education, good water supply, and electricity are still obvious, but appear better than neighboring countries like Togo, Burkina Faso, Benin, and Nigeria (United Nations Development Programme, 2020).

## 2.2 | Ghana and COVID-19 pandemic

Ghana had the first six COVID-19 cases reported on 9 March 2020, and the numbers have increased rapidly to 100,747 as of July 2021 (World Health Organisation, 2021). The precautionary and controlling measures include policies and laws that restrict physical interactions. Such directives include local and international travel restrictions, limitations on mass gathering, and closing of schools, shops, restaurants, and malls (Ozili & Arun, 2020). All these measures, while preventing the total collapse of fragile health infrastructure, are putting significant pressure on the economy, particularly the sizable number of formal and informal businesses that contribute more than 70% of the national GDP.

For instance, the socio-economic implications of the pandemic resonate beyond the psychology of lack of freedom to the hardship of increased prices of food commodities and resulting hunger and anger (Asante & Mills, 2020). The law of demand and supply has orchestrated a substantial increase in costs of goods and services because the importation of raw materials and items that make services possible has been stopped by border closures. Consequently, the limited available commodities are being sold at higher prices. MSBs in the informal sector appears to be more affected by these situations since they do not enjoy government visibility. Although the Ghanaian government gave palliatives aimed at reducing the socio-economic impact of the pandemic, such interventions had limited impact due to fundamental inhibiting challenges of corruption and distrust (Deloitte, 2020).

## 3 | THEORETICAL FOUNDATION AND CONCEPTUAL MODEL

### 3.1 | Economic impacts of MSBs

Micro and small business, theoretically, could mean different things to different people across different landscapes because of its subjective definitions. Nonetheless, MSB has a common perception drawn from the adjectives, *micro*, and *small* that qualifies the *business*. MSBs are *simply* small businesses. The key metrics for defining MSBs include the number of employees, and the value of fixed and/or financial assets (Ebitu et al., 2016; The Bank Association South Africa, 2016). In the context of Ghana, the Venture Capital Act 2004, and the National Board for Small Scale Industries (NBSSI) portray the *micro* and *small* business as an entity that undertakes economic activities that employ 1–29 persons and generates financial assets not more than USD 100,000.

MSBs create jobs and alleviate poverty (BOI, 2019). Moreover, MSBs encourage market and price competitiveness, whilst checking the oligopolistic or monopolistic tendencies of large firms that typically take advantage of the weakness in policies, culture, infrastructure, and other socio-economic structures (Osotimehin et al., 2012). According to Oppong et al. (2014), MSBs stems from rural–urban migration, and accelerate rural development, particularly when MSBs leverage the use of emerging DTs and seize growth opportunities to become a large corporation. Most large firms do not start *big*; they started *small* and evolved into conglomerate businesses.

MSBs in low-income country contexts such as Ghana have pain-points, and these include poor access to finance, poor infrastructure (i.e., power supply, road network), poor management skills, and inconsistent policies that support multiple taxations, and discourage businesses from formalizing their businesses (Kasseeah, 2016). In recent times, the problems of MSBs appear to be compounded by poor uptake of DTs: noticeably made apparent by the COVID-19 pandemic (Fletcher & Griffiths, 2020; Juergensen et al., 2020). Although there are efforts by government and international agencies to develop MSBs, it appears the interventions in most cases fall short of mid/long term expectations; and this has been a source of concern as it underscores the need to continually evaluate the MSBs problem domain to find enduring and contextual solutions. Hence, this study aims to *interpret and simplify* the DC framework through a blueprint that suggests how MSBs could effectively develop.

### 3.2 | Dynamic capabilities of MSBs

Teece and Pisano (1994) published the first literature on the dynamic capabilities (DC) framework, presenting it as a business survival and growth framework, which described how firms respond to changes in their internal and external environments (Ambrosini & Bowman, 2009). The framework makes sense of how DCs of businesses with similar resources, and in a similar (change) situations, have unique responses to change and subsequently realize unique business outcomes. DC evidenced how business managers “integrate, build and reconfigure internal and external competencies to address rapidly changing environments” (Teece et al., 1997, p. 516). Eisenhardt and

Martin (2000, p. 1107) further defined DC as “organizational and strategic routines by which firms achieve new resource configuration as markets emerge, collide, split, evolve or die”. These attributes of DCs, therefore, present it as learnable, repetitive procedures or processes, aimed at helping firms achieve a distinctive positive outlook: using distinctive in the sense that learning practices are inherently social, and do not take place merely via imitation and mimicry of individuals (Teece & Pisano, 1994). Thus, even when firms exhibit the same DCs, there is intrinsically personalized effects that result in different outcomes.

**Proposition 1.** (P1): Micro and small businesses improve their dynamic capability by repeating learnable processes and procedures.

The complexity of DCs was explained by categorizing them into three broad dimensions, namely adaptive, absorptive, and innovative capabilities; and further relating these categories with how a firm maximizes opportunities and reconfigures its resources (Wang & Ahmed, 2007). Adaptive capability demonstrates the firm's ability to sense, filter and identify “*emerging*” market opportunities and accordingly *adapt* to maximize opportunities (Biedenbach et al., 2012). The absorptive capacity of a firm is inward-reflective, as it considers how to exploit the latest information within the firm, the firm's collaborators or stakeholders, and competitors. Innovative capability looks at how firms create or refine products and services (Biedenbach et al., 2012; Wang & Ahmed, 2007).

**Proposition 2.** (P2): Micro and small businesses demonstrate dynamic capabilities as absorptive, adaptive, and innovative capabilities.

The purpose of absorptive, adaptive, and innovative capabilities is to *sense and seize opportunities* in a fast-paced environment; this concept of *sensing and seizing opportunities* is regarded as “*micro-foundations*” of DC (Faizal et al., 2012; Haas, 2015; Helfat et al., 2007); MSBs, through adaptive, absorptive, or innovative capabilities, sense and seize opportunities. Success at sensing and seizing business opportunities creates more “resources” such as new skills, products, services, income, tools, and equipment among others. The relative and unique mix of the existing and new resources is called resource *reconfigurations* (Parida et al., 2016; Pavlou & El Sawy, 2011). The reconfigured resources further enhance the DCs and ability to maximize opportunities, which leads to additional shift(s) in resources, and this *learning* process continues iteratively.

**Proposition 3.** (P3): Micro and small businesses shift resources when they sense and seize opportunities through adaptive, absorptive, and innovative capabilities.

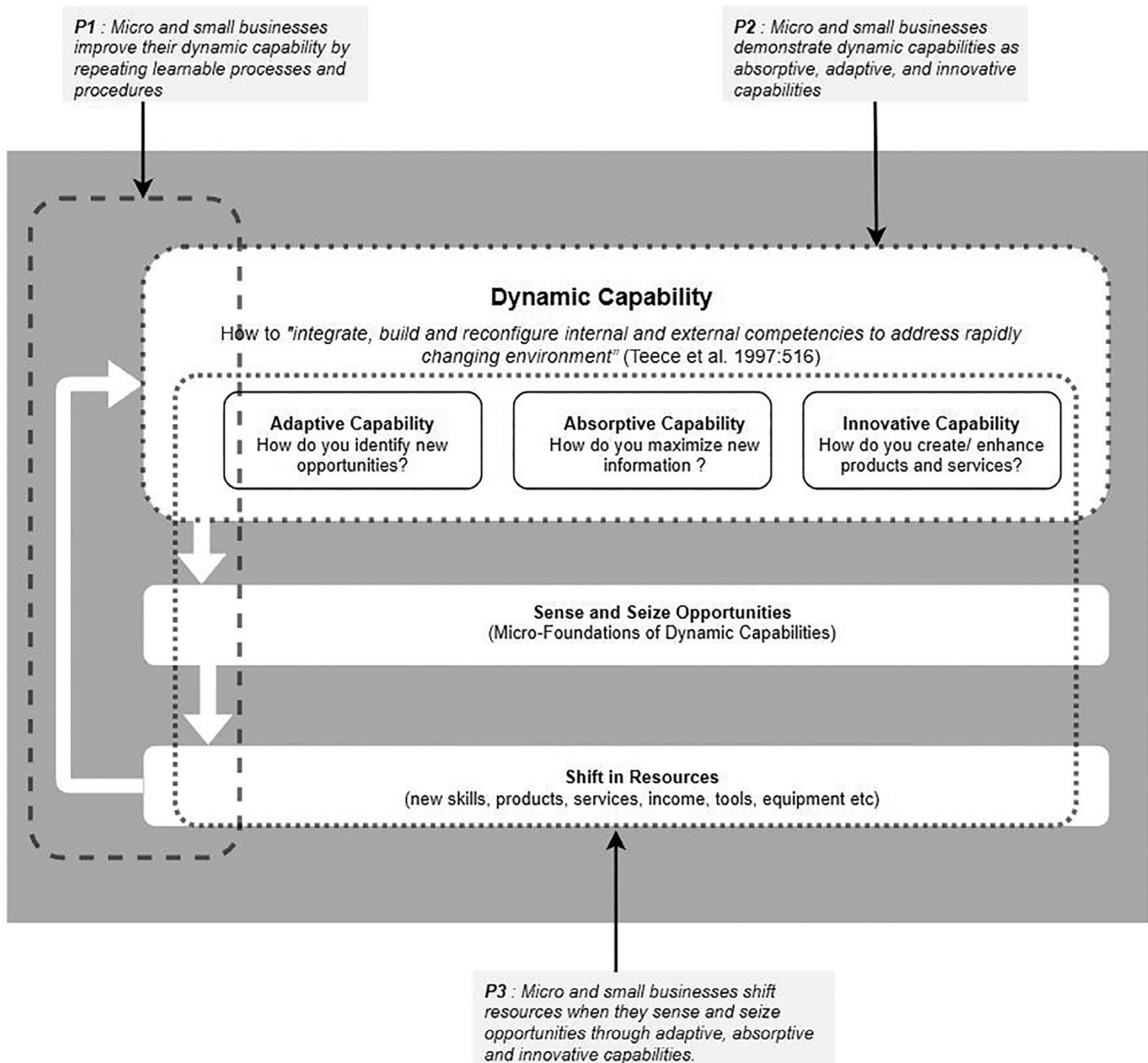
Drawing on the DC literature, Figure 1 assembles propositions P1, P2, and P3, and presents the DC framework as a conceptual model.

From the foregoing, DCs help firms to manage the tides of unpredictable, fast-paced change by creating uniquely innate capabilities that help firms maximize opportunities. There are, however, gaps in the literature regarding the practice of the DC framework in extreme change situations such as a pandemic, and how micro-businesses that are foundational to the socio-economic development of low-income countries react to the DC framework in a pandemic context. This is even more so when the pandemic seems to have motivated an increased uptake of DTs. Therefore, this study makes sense of how MSBs leverage DCs through DTs.

### 3.3 | Dynamic capabilities of MSBs in a pandemic situation

Business management problems of MSBs appear to have compounded during the COVID-19 pandemic due to the disruptive approach used for curtailing the spread of the virus; examples include lockdown, restrictions, and social distancing. Extant literature suggests that during the pandemic, entrepreneurs are inherently adept at adjusting business processes and procedures as the operating environment evolves (Dyduch et al., 2021; Weaven et al., 2021). According to Rashid and Ratten (2021), small business entrepreneurs actively sense trends, and they consistently make tough decisions. For instance, the traditional marketing and service delivery techniques were no longer effective during the pandemic, with businesses making decisions to switch to DTs to market and deliver products innovatively. Most of the MSBs must deal with the digital skill-gap and steep digital skills learning curves. Economic activities also slowed down significantly, resulting in a significant reduction in revenue, redundancies, and layoffs.

Weaven et al. (2021) found that during COVID-19 MSBs are more context-aware and flexible as they demonstrate the micro-foundations of DCs: sensing opportunities, seizing opportunities, and transforming resources. A more detailed investigation into DCs of MSBs in the pandemic revealed a significant increase in the MSBs' ability to imitate and diversify products and services. On the other hand, these DCs reduce the ability to maintain consistent liquidity, with this liquidity being further impaired by the need to adapt modern DTs. (Dyduch et al., 2021). Although there is evidence that MSBs leverage DCs during the COVID-19 pandemic, there appears to be gaps and incomplete knowledge of how MSBs operationalize the DC framework; and in particular, how sensing opportunities evolved into seized opportunities and transformed resources, and how these resources in turn helps to sense more opportunities, thereby helping businesses to progressively develop “natural” coping mechanism in a fast-paced business environment. Therefore, this interpretive study sought to close this knowledge gap by making sense of how MSBs played the DC framework in the COVID-19 pandemic in a low-income country context.



**FIGURE 1** A conceptual model of the dynamic capability framework

### 3.4 | Dynamic capabilities and DTs in MSBs

Digital Technologies are electronic tools, systems, or platforms that simplify data collection, storage, sharing, and retrieval, usually facilitated by the internet or other telecommunication technologies (Salmons & Wilson, 2009). Examples of DTs include mobile applications (bespoke or generic), social media, collaboration, payment, and e-commerce platforms. There is evidence that the DT significantly enhance the development and growth of MSBs (Dibrell et al., 2008; Ulas, 2019); particularly, their ability to innovate and adapt to a changing business environment (Dibrell et al., 2008; Perry, 1999; Reuver et al., 2018). With the advent of newer technologies such as the Internet of Things, Artificial Intelligence, Machine Learning, and Blockchain among others, the capability of MSBs to innovate using DT is further boosting growth and development opportunities (Akpan et al., 2020). For instance, it gives the ability to invent newer business models and adapt the functionalities of specific DTs to progress the new models. An example is the use of WhatsApp as an e-commerce platform (Owoseni & Twinomurinzi, 2018b), and the use of the blockchain app (Zlto) to dispatch groceries/medicines, and manage virtual doctors' consultations (mHealth) (UNDP, 2020).

Innovation and adaptation are forms of DC, which speaks to how firms react to changing business climates (Wang & Ahmed, 2007). However, as opined by Papadopoulos et al. (2020), there is limited knowledge regarding the use of DT for managing business in *extreme* situations such as a

pandemic. Through interpretive reflections, this study sought to close the knowledge gap by studying how MSBs in a low-income country setting, such as Ghana, develop DCs using DTs in extreme business scenarios.

## 4 | RESEARCH APPROACH

### 4.1 | Research methodology

We framed the study using interpretive research principles and a reflective mindset. Interpretive research looks to *know* and *understand* social reality through practices and techniques that often draws on a researcher's experience, interactions, and worldviews (Goldkuhl, 2012; Klein & Myers, 1999). Interpretive research principles sit well with the goal of this study: to *know* how MSBs leverage DCs through DTs in a pandemic situation. The study progressed in two phases: (1) qualitative interviews aimed at identifying DC constructs and DTs; and (2) the quantitative questionnaire for evaluating DC constructs in a pandemic. There was a unique background to this research approach as the study was originally planned to be a qualitative study aimed at answering **RQ1**: *How can the dynamic capability framework be interpreted in practice and in the context of the micro and small businesses, and a low-income country?* The interviews took place in January 2020 before the pandemic spread to Ghana, however, the research activities slowed down due to the COVID-19 pandemic. Nonetheless, the pandemic presented an opportunity to re-adapt the research to contribute to debates on emerging challenges of MSBs motivated by COVID-19 and increased usage of DTs. Thus, the quantitative phase of the research was added to answer **RQ2**: *How do digital technologies influence dynamic capabilities of micro and small businesses in a low-income country and pandemic situations?* The questionnaire was administered in October 2020 during the COVID-19 pandemic. A mixed-method research approach such as this is widely acceptable in cross-disciplined research that involves Information Systems discipline (Mitrega & Choi, 2021; Okoli & Schabram, 2010).

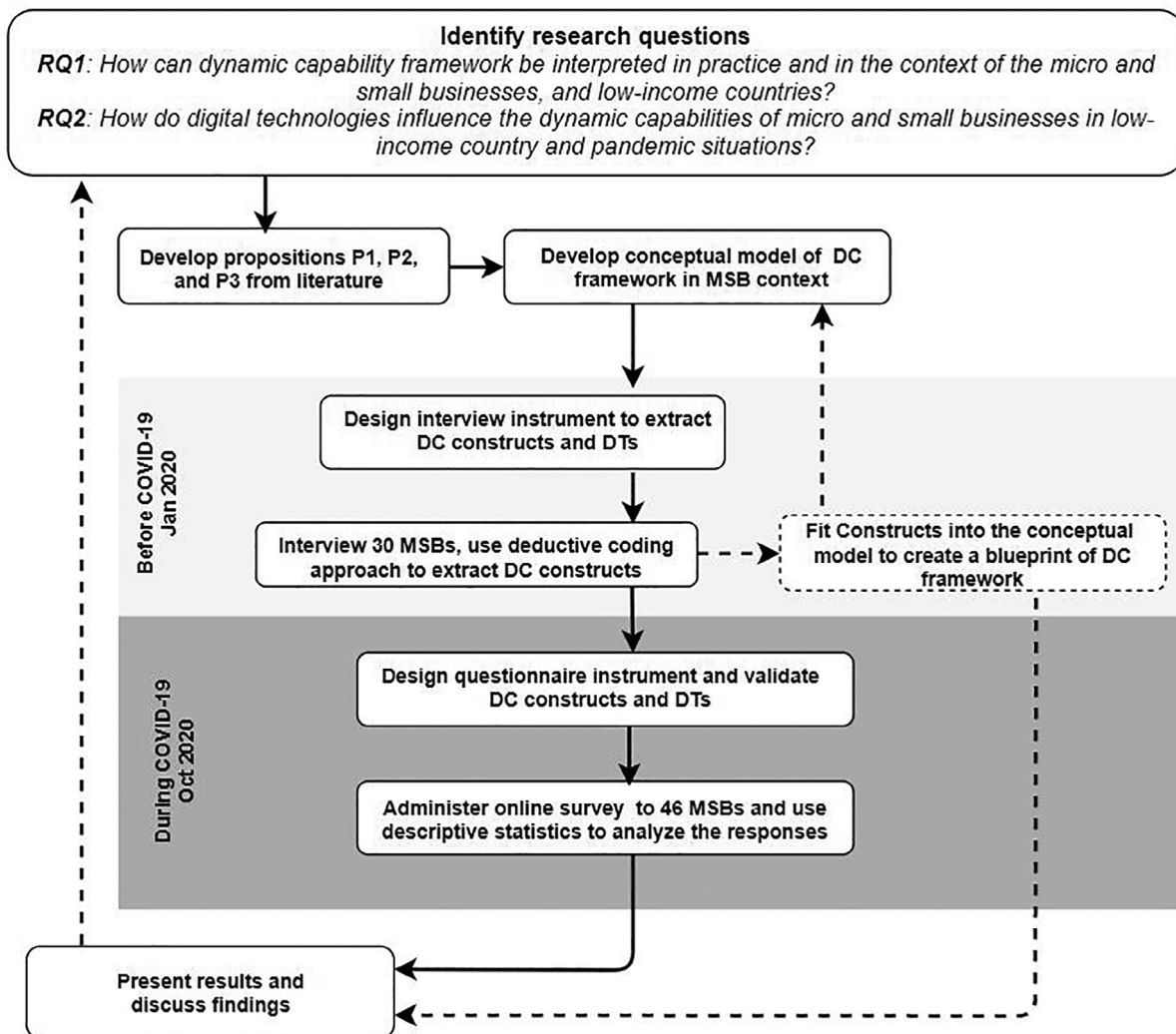
Following the contextual understanding of the DC framework (see Figure 1) discussed in the literature review (see section 3.2), we developed a semi-structured interview instrument that elicited basic business information (i.e., type of business, years of operation and employee count), the DTs used for business and the DC constructs along the three dimensions of DCs: absorptive, adaptive, and innovative DCs (see Appendix 1, Tables A1 and A2). Participants of the interview were drawn from Accra, the capital city and industrial hub of Ghana and those targeted were adults aged 18 and above who own or manage MSBs. Research participants were selected through convenience, non-probability sampling. One of the authors who resides in Ghana *randomly* contacted 36 participants in the Accra business district leveraging his personal contact and referrals from friends and associates. Subsequently, 30 participants were physically interviewed one-on-one; the interview sessions in English lasted for about 15 min each and were audio-recorded using the audio-recording app. The interviews were transcribed. Deductive coding and thematic analyses revealed the DC constructs (see details in section 4.2).

Next, the emerged constructs were phrased as procedural statements, and the statement were used to create 5-point Likert scale questions. The questions elicited feedback that sought to know how the MSBs have intensified DCs (constructs) during the COVID-19 pandemic, and what DTs have been helpful. This second phase of the research through the online survey obtained data from 46 participants, (30 interviewees in the first phase of the research, and 16 randomly selected persons who met the sampling criteria). The questionnaire had an open question that asked the participants to “describe new ways of identifying opportunities, extracting latest information, and creating products and services.” This aimed at checking if new DCs were developed during the pandemic. Figure 2 summarizes the research approach.

The study had ethics approvals from our host universities (where the researchers work). Participation in the research was voluntary and anonymous, such that personal identifiable details (name, address, and date of birth) were not collected. The participants were aware of the implications of participating in the research, and they all willingly consented.

### 4.2 | Data analysis

The audio interviews were transcribed to Microsoft word documents, and the documents imported into NVivo qualitative analysis software. The choice of NVivo was motivated by a study that recommended NVivo as the best qualitative analysis software for managing ‘coding’ activities (Al Yahmady & Al Abri, 2013). Moreover Nvivo appears most appropriate when evaluated alongside 13 parameters for choosing qualitative data analysis software (St John & Johnson, 2000). After importing transcribed interviews into Nvivo, the data were analyzed through two cycles of coding as suggested by Saldana (2009) and practiced by researchers in a similar situation. Given the interpretive nature of the research, the deductive coding method appears more appropriate according to Skjott Linneberg and Korsgaard (2019). The deductive coding method uses a predefined coding frame or anchor codes to focus the coding activities on existing issues or gaps, and in the context of the research, it focuses on making sense of the DC framework and in particular the propositions P1, P2, and P3 in Figure 1. The first-cycle coding captured business



**FIGURE 2** Summarized research approach

activities, processes, and procedures of MSBs through a coding technique known as *processes coding* (Fereday & Muir-Cochrane, 2006). Process coding in this instance was deductive because it maps to predefined anchor codes.

Drawing on the extracted codes from the first-cycle coding, the second cycle further refined, categorized, and aligned the codes along similar ideas; each idea represents a theme or a second-cycle code. To reduce the researcher's biases that could impede independent judgments during coding activities, two co-researchers independently reviewed the coding process, and a few conflicting thematic groupings were discussed and agreed upon. These independent reviews enhanced reliability of the coding strategy and the resulting themes. Moreover, the background and worldviews of researchers could influence their judgment and outcomes of the coding. Thus, it is beneficial to mention that the lead researcher in this study has 12 years of software development experience in the retail banking sector before joining academia. The second researcher is a business information systems lecturer, and the third researcher wears both technical and business leadership caps as a business consultant in the Fintech industry.

The themes that emerged from the second-cycle coding are the DC constructs of MSBs, and the frequency of the codes in each thematic group was noted with us considering the frequency as the weight of each DC construct. Table 1 outlines the activities, intended purpose, and outcome of each step in the coding analyses.

Finally, the emerged constructs were phrased as procedural statements, easily understood by the research participants. Using 5-point Likert scale questions, we elicited feedback that suggest how the participants have intensified the DCs (constructs), and what DTs have been helpful. The questionnaire data were analyzed using descriptive statistics using Microsoft Excel functions. To simplify the presentation and visualization of DTs retrieved from the interview and the questionnaire, we used NVivo to create word-cloud interpretations. We created three word-cloud diagrams of DTs used by MSBs: DTs used before COVID-19; DTs used during COVID-19; and combinations of DTs used before and during the pandemic.

**TABLE 1** Summary of the coding strategy

Steps	Activities	Purpose	Output
1	Transcribed audio recorded interviews to text	To facilitate thematic analysis	30 Microsoft word document files
2	Imported files into NVivo and created anchor codes: DTs – Digital Technologies ABc – Absorptive Capabilities ADc – Adaptive Capabilities IMc – Innovative Capabilities SHr – Shifting Resources Map the interview questions to relevant anchor code	To create a coding frame for the conceptual model (Figure 1) in line with the deductive coding method	Anchor codes and mapped interview responses
3	First cycle coding: using process coding technique, phrases/words that represent activities, processes or procedures were coded	To capture essential business activities, processes, and procedures (Fereday & Muir-Cochrane, 2006)	List of codes along with defined anchor codes DTs, ABc, ADc, IMc, and SHr
4	Second cycle coding: Grouped related and connected codes, noting the number of codes in each group	To refine first-cycle code, and extract DC constructs	List of constructs with corresponding weights
5	Independent review of first and second cycle coding	To ensure reliability of the coding process and constructs	Revised list of constructs with corresponding weights
6	Re-phrase the constructs into procedural, then extend the conceptual model (Figure 1) to a blueprint for DC framework in practice and in the context of the MSBs in Ghana	To answer RQ1: <i>How can dynamic capability framework be interpreted in practice and in the context of the micro and small businesses, and low-income country?</i>	<i>Blueprint of DC framework. This is contextual and practicable DC framework for MSBs low-income countries</i>

## 5 | RESULTS

This section presents the research findings. First, the demography of research participants were described. Second, the DC constructs of MSBs were highlighted as we present DTs used for the DCs. We concluded the section with the outcome of descriptive statistics that revealed how MSBs reacted to their DCs during the COVID-19 pandemic.

### 5.1 | Demography of MSBs that participated in the study

In creating a picture of the MSBs involved in this research, the average age of participants and the MSBs they manage are 30.2 years and 5.6 years, respectively. The MSBs were in 12 business sectors. Twenty-nine of the 30 participants owned or co-owned the MSBs, and they employed six staff on average. The MSB with the least number of staff had two persons on the payroll while the maximum had 18 persons. Table 2 details the demography of research participants and their MSBs. With regards to the quantitative analysis, the demography appears not to be relevant to the objective of this research; moreover, 30 out of the 46 persons that participated in the survey were drawn from the list of interviewees.

### 5.2 | Dynamic capabilities of MSBs

The final themes (constructs) that emerged from the two cycles of coding were organized in a way that simplifies and illustrates the practicability of the DC conceptual model (Figure 1). Overall, there were 135 codes after first-cycle coding, and they were distributed as follows: 66 absorptive capabilities; 47 adaptive capabilities; 12 innovative capabilities; and 10 shifts in business resources. The second-cycle coding revealed 21 constructs, the frequencies of codes that summed up to a construct suggest the strength of the construct. Considering the constructs along the three dimensions of DCs, adaptive capability has eight constructs: *managing customers to gain trust, business research and trainings towards skill upgrade* came tops. For absorptive capabilities, *advertisement* had the highest frequency of 39, followed by *information sourcing on the internet and social media. Packaging, personalization and imitation of products and services* are the main innovative capability constructs. Upon reviewing how MSBs reflect the shift in resources, *upgraded skillset (new knowledge), new products and services, improved quality and upgraded tools, techniques and technologies* were constructs that surfaced.

To answer RQ1: *How can the dynamic capability framework be interpreted in practice and in the context of the micro and small businesses, and a low-income country?* We fit the constructs into the contextual DC framework (Figure 1), and this resulted in a *blueprint* of the DC framework from the perspective of MSBs in Ghana (see Figure 3).



**TABLE 2** Demography of research participants and their MSBs

SN	Business type	Business age (Yrs.)	No of employees	Participant's role	Participant's age (Yrs.)	How participants describe the business (interview excerpts)
1	Information Technology	2	2	Manager	20	We train people in IT skills
2	Marketing	3	2	Owner	22	We create graphics for advertisements
3	Fashion	5	10	Owner	36	It is all about fashion; then we do sew cloths
4	Photography	3	3	Owner	21	This business is about capturing moments such as birthdays, engagements, and weddings
5	Fashion	4	2	Owner	24	We do online fashion sales, we sew, and people order so it is more about female dressing
6	Retail	2	2	Owner	23	We help people to shop.
7	Food	2	2	Owner	30	We do pastries, bakery, and other stuff
8	Fintech	3	18	Owner	24	We have a system for money transfer that is transferring money in Ghana cross-platform from banks and mobile money
9	Construction	4	5	Owner	24	Sells building materials
10	Fashion	6	5	Owner	32	We do produce bags, shoes, slippers for men and women
11	Imports/exports	5	4	Owner	33	We do general trading, imports, and exports
12	Information Technology	5	5	Owner	30	We operate a business center and repair computers
13	Fashion	7	5	Owner	31	We design, sew, and sell world-class wears
14	Carpentry	5	6	Owner	32	We make home and office furniture
15	Printing Press	5	8	Owner	34	We produce notebooks and it is all about producing notebooks
16	Fashion	25	3	Owner	60	I sell cloth
17	Retail	22	4	Owner	42	I sell general wares
18	Fashion	4	2	Owner	39	I operate a boutique, selling shoes, dresses
19	Fashion	2	2	Owner	24	I do sales of fashionable stuff
20	Job agency	2	9	Owner	28	My company is a recruitment agency and what we do is we have field markers who go around companies, hotels, restaurants, pubs and other enterprises
21	Retail	5	10	Owner	23	When we shop (buy) the items and they come, then we package them and then sell them online again
22	Retail	5	7	Co-Owner	28	We deal in electronics, sales, and repairs
23	Retail	5	6	Owner	65	I buy charcoal from the village and come to Accra to resell
24	Food	4	5	Owner	24	We make and package and distribute popcorn
25	Beauty	15	14	Co-Owner	23	We are into hairdressing
26	Media	2	2	Owner	25	We help other small businesses to advertise their products and services
27	IT	3	3	Owner	26	We repair mobile phones, tabs and sell accessories.
28	Transport and logistics	8	9	Owner	36	We operate car rentals services, we deal with transport, logistics and retail
29	Retail	2	4	Owner	25	I sell many brands of perfumes
30	Education	4	18	Co-Owner	24	We ran a private pre-school

### 5.3 | How MSBs responded to the COVID-19 pandemic and use DTs for dynamic capabilities

For clarity, DTs used by MSBs for DCs were described in three stages: (1) DTs used *before* the pandemic; (2) DTs adopted *during* the pandemic; and (3) the combination of DTs used *before* and *during* the pandemic (see Figure 4). MSBs used a range of DTs mostly powered by the internet on handheld devices and operated as mobile apps. These DTs can be grouped into social media, productivity, payment, and e-commerce tools. Before the pandemic, social media were the major DTs, with WhatsApp as the most prominent tool. The dawn of the COVID-19 pandemic saw more

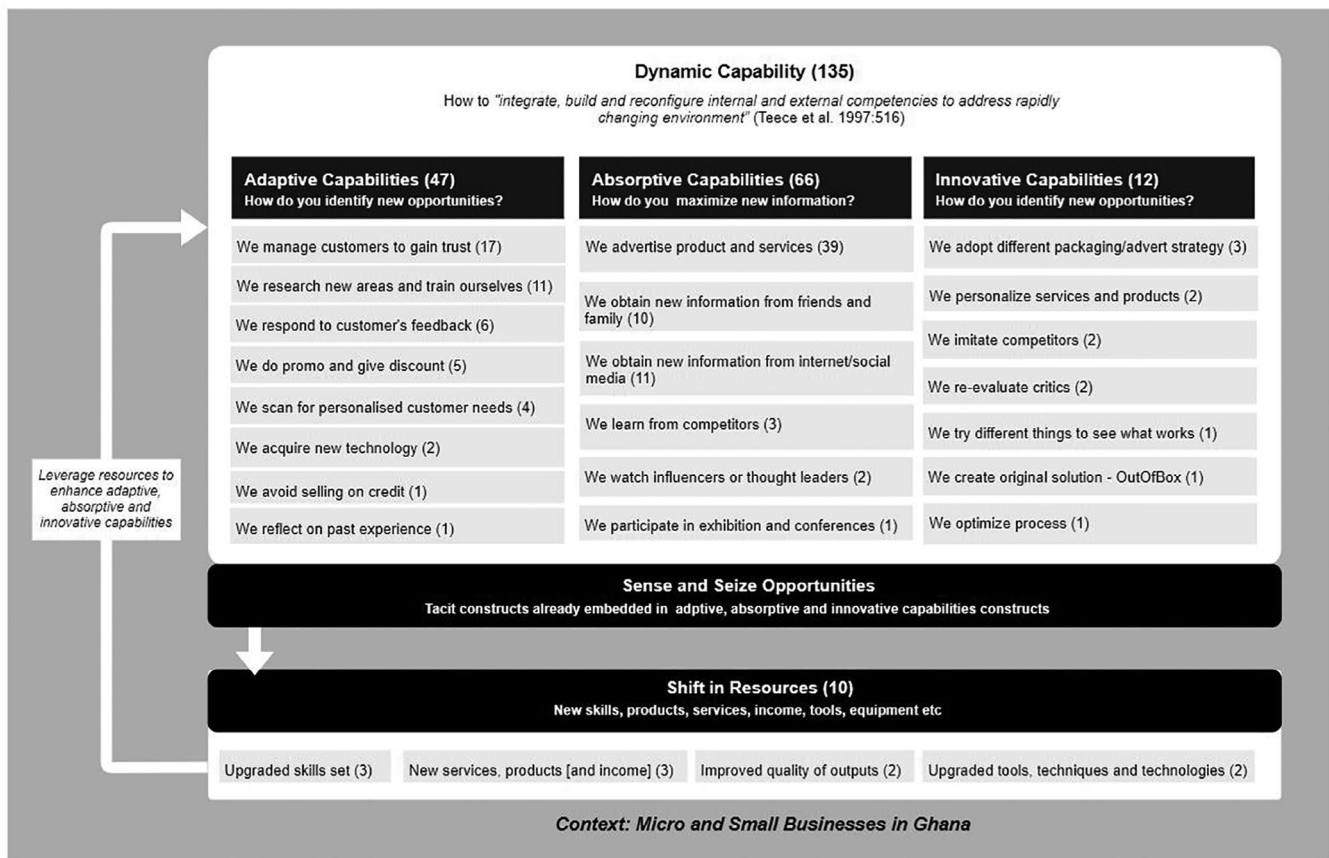


FIGURE 3 Blueprint of the dynamic capability framework for MSBs in Ghana

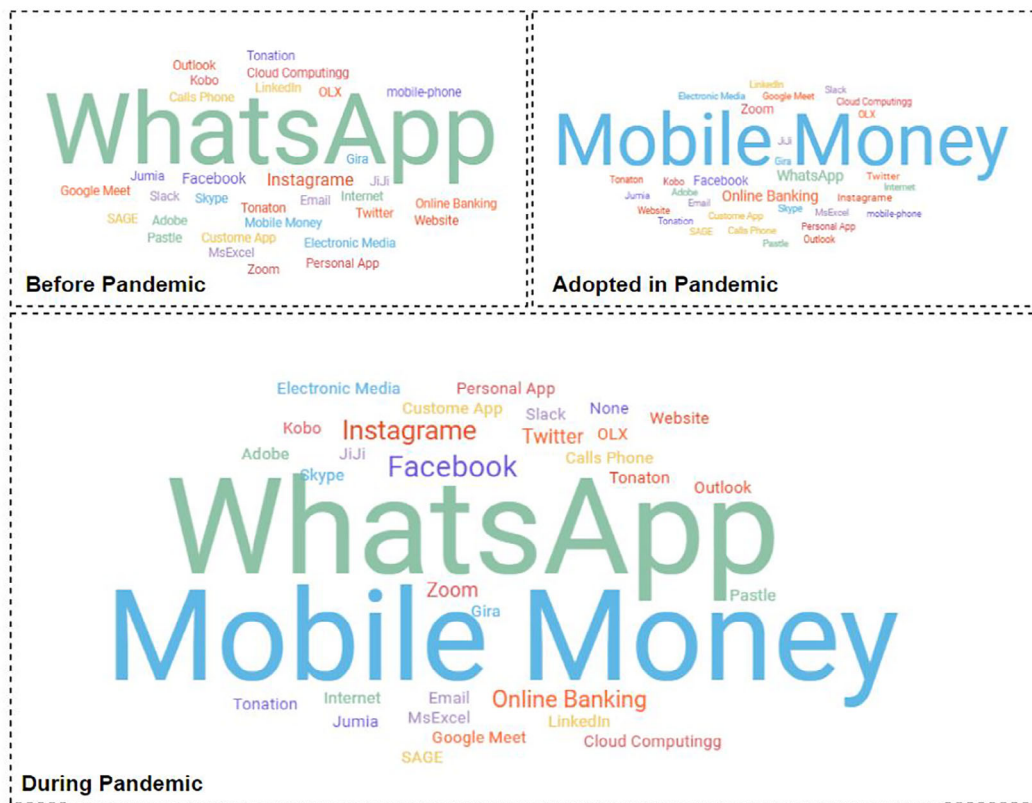
MSBs adopting payment technologies such as mobile money and online banking. When we considered the holistic DT usage during the pandemic, social media and payment technologies appeared evident. Of course, there were other DTs that featured in the analysis; examples include SAGE, Microsoft outlook/excel, cloud storage, Adobe, custom apps, content management tools and websites.

From the survey, the extent to which MSBs exhibit the DC constructs during the pandemic increased across all constructs, and the percentage increase stands between 82% and 58%, as shown in the inferential statistical analysis (see Table 3 and Figure 5). Expectedly, *obtaining information from the internet* was prominent, due to restrictions, lockdown, and the need to do business remotely. The DC constructs that increased includes *process optimization, training, research, and creating out-of-the-box products or services*. Considering the constructs that dropped, it appears some MSBs reduced *imitation, shadowing thought leaders, and selling on credit*. The content analysis created suggests that all extracted codes could fit into one or more of the existing DC constructs in Figure 3. Upon this backdrop, our study implies new DCs were *not* created during the COVID-19 pandemic. These results throw light on to **RQ2: How do digital technologies influence dynamic capabilities of micro and small businesses in a low-income country and pandemic situations?** The connections between DCs and DTs are further discussed in the next section.

## 6 | INTERPRETIVE REFLECTIONS ON THE RESULTS

### 6.1 | Shades of dynamic capabilities

This study showed 21 DC constructs across three dimensions of DC: eight adaptive capabilities, six absorptive capabilities and seven innovative capabilities; but the weights of these DC dimensions are 47, 66, and 12, respectively. Interpretive reflections on the results imply that MSBs mostly demonstrate the absorptive form of DCs; the MSBs are naturally in search of the latest information that could help to maximize opportunities. This is understandable because adaptive and innovative forms of DC rely on information. In other words, absorptive capabilities enhance adaptive and innovative capabilities; and this also explains why MSBs' primary use of DTs is for communication and interaction; for exchanging and sniffing out information through social media (WhatsApp) and the internet (see Figures 4 and 5). Information in this regard includes knowledge about sales, market trends, competitors, modern technology, products, services, policies, regulations and so on. Therefore, it means that



**FIGURE 4** Word-clouds of digital technologies used by MSBs in Ghana

strategies or interventions that help MSBs to easily access up-to-date information around them could significantly increase their dynamic capability and the ability to maximize opportunities and speed-up recovery from the post-COVID-19 dip.

Furthermore, interview extracts showed MSBs' physical interaction with customers or stakeholder was to extract useful information, which underscores the importance of individual MSB manager's personality and communication skills. For instance, the following are excerpts from the research participants, all pointing to the importance of extracting relevant information:

- “When you are jovial towards dealing with your customers, you'll get more of them, and your business will flourish.”
- “We have to be patient with our customers and give them some commission when they are buying from us but when you frown towards them, you'll lose them.”
- “If you resell it, the people complain, so I told those at the village to modernize how they package the charcoal and make it in such a way that the market can continue.”
- “When it comes to business, the more you work, the more experience you get, and with this experience, you can tell if your business is progressing or retrogressing. So, you must be vigilant to detect changes in your business.”

The fact that deductive coding revealed 21 constructs does not mean a typical MSB demonstrates all these 21 DC constructs at once; rather, the results could imply each MSB has at least 21 unique capabilities from which it could select, combine, and practice varying measures and combinations of DCs while sensing and seizing opportunities in fast-changing, fluctuating, and unpredictable business environments. For instance, MSB-1, on one hand, may devise a process to *learn from competitors*, *re-evaluate critics* and *scan for personalized customers' needs*; and sense and seize new market opportunities that led to *improved quality of product* and more sales. On the other hand, MSB-2 decides to *acquire modern technology*, *optimize [existing] process*, and *watch influencers or thought leaders*; and these activities could motivate *new services and products*, and more sales. Even if MSB-1 and MSB-2 run the same type of business and they both sold more at the end of the day, their combinations of DCs are different, which then leads to a similar but distinct *shift in resources*. Nonetheless, the DCs exhibited by both MSBs were selected from the 21 DCs in Figure 3. These MSBs may continue to combine DCs iteratively while they get better at it. This scenario practically explains the intrinsic, distinctive, repeatable, learnable, non-copiable, non-transferable, and discernable elements of the DC framework that was discussed in the literature (Ambrosini & Bowman, 2009; Faizal et al., 2012; Teece, 2007; Teece & Pisano, 1994; Wang & Shi, 2011).

**TABLE 3** Dynamic capability constructs of MSBs in Ghana

Constructs	Reduced greatly	Reduced slightly	Stayed the same	Increase slightly	Increase greatly	Mean
Absorptive (Mean of Mean = 4.00)						
We advertise products and services (39)	1	4	8	11	22	4.07
We obtain the latest information from friends and family (10)	1	1	6	19	19	4.17
We obtain the latest information from internet/social media (11)	1	0	8	9	28	4.37
We learn from competitors (3)	1	2	4	20	19	4.17
We watch influencers or thought leaders (2)	4	4	8	15	15	3.72
We participate in exhibition/conferences (1)	9	2	7	12	16	3.52
Adaptive (Mean of Mean = 3.98)						
We manage customers to gain trust (17)	0	4	5	18	19	4.13
We research new areas, train ourselves (11)	1	2	6	14	23	4.22
We respond to customers' feedback (6)	3	1	5	15	22	4.13
We do promo and give discounts (5)	4	2	11	12	17	3.78
We scan for personalized customer needs (4)	1	3	11	15	16	3.91
We acquire modern technology (2)	3	3	6	17	17	3.91
We avoid selling on credit (1)	3	7	9	7	20	3.74
We reflect on experience (1)	1	2	6	19	18	4.11
Innovative (Mean of Mean = 4.06)						
We adopt different packaging and advertisement strategies (3)	3	1	9	15	18	3.96
We personalize services and products (2)	2	1	6	17	20	4.13
We imitate competitors (2)	4	1	8	13	20	3.96
We re-evaluate critics (2)	3	3	4	20	16	3.93
We try different things to see what works (1)	2	2	12	11	19	3.93
We create original solution – Out-Of-Box (1)	2	1	5	15	23	4.22
We optimize processes (1)	1	2	5	13	25	4.28

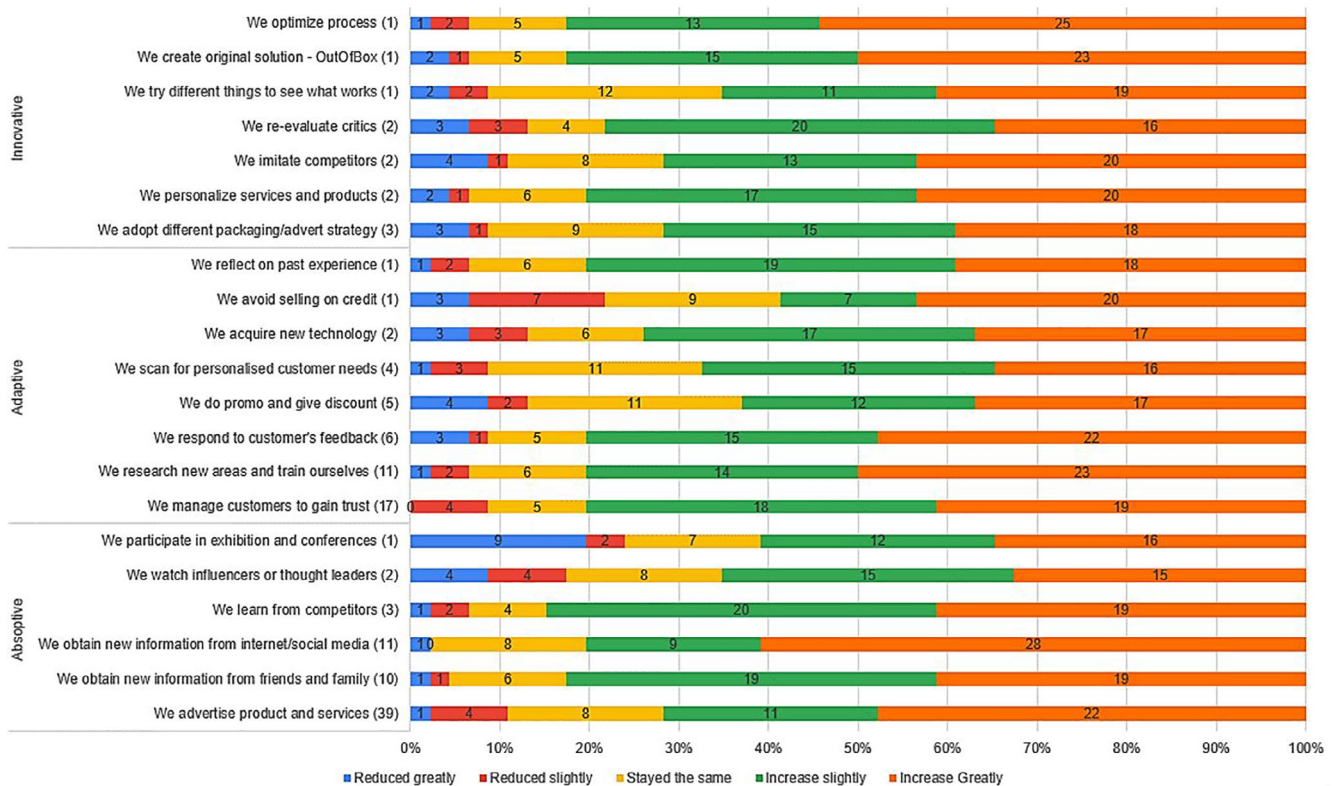
## 6.2 | DTs for dynamic capability

Technology has been identified as an enabler of DCs (Camisón & Monfort-Mir, 2012; Henton & Held, 2013; Owoseni & Twinomurizi, 2016), and this study collaborates this stance. However, it revealed a remarkable perspective, particularly in the way the adoption of DT transited from social media platforms before the pandemic to online/mobile payments during the pandemic. The motivation for this could be traced to lockdown and restricted physical movements. But this is potentially revealing another bigger factor, and that is financial inclusion and formalization of MSBs that constitute the informal business sector (BOI, 2019; Jelilov & Onder, 2016; Oppong et al., 2014). It appears that extreme business disruptions such as a pandemic could provide opportunities for government and authorities to re-access and improve on the formalization of MSBs and entrepreneurship activities. Moreover, more indigenous payment solutions could be explored to maximize the prevailing openness of MSBs to remote payment and banking services. Eventually, this could advance the United Nations sustainable development goal 8 (SDG 8.10) that seeks to “*strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance, and financial services for all*” by 2030 (United Nations, 2020).

## 7 | CONTRIBUTIONS TO THEORY, RESEARCH, AND PRACTICE

### 7.1 | Contributions to theory

The preceding sections interpreted the DC framework from MSBs and a low-income country's perspectives; and this offered a multi-dimensional contribution to theory and extant literature. This study demystifies the strategic purpose of the DC framework by making the framework operational for MSBs. More importantly as MSBs were considered ubiquitous, heterogeneous and difficult to generalize (Derham & Cragg, 2011; Juergensen et al., 2020; Owoseni & Twinomurizi, 2018a). Furthermore, the *blueprint* of the DC framework (Figure 3) makes it easier for policy makers to understand, adopt, and adapt existing policy frameworks that could enhance post-COVID-19 pandemic economic recovery.



**FIGURE 5** Extent to which MSBs exhibit dynamic capabilities during the COVID-19 pandemic

## 7.2 | Contributions to research and practice

This study made contributions to research and practices in the areas of strategic small business management, entrepreneurship innovation, and information systems knowledge domains as follows:

- First, it created a conceptual model for exploring the DCs of MSBs (see Figure 1), then using the conceptual model, the study extracted DCs of MSBs in Ghana and developed a *blueprint* of the DC framework (see Figure 3). It progressed further to validate and illustrate how MSBs use DTs to intensify DCs in extreme situations such as a pandemic (see Figures 4 and 5). The blueprint simplifies the DC framework and makes it more understandable and useful to entrepreneurs when managing MSBs. For example, through this study MSBs entrepreneurs could understand how communications and managing customers to gain trust could inspire new information and new business opportunities. The study establishes the links between dynamic capability constructs and the shift in business outcomes in terms of improved skills, products, services, techniques, and technologies.
- Second, we discovered that strategic interventions aimed at enhancing DCs of MSBs should focus on absorptive capabilities, and this discovery is important in MSB development practice. Absorptive capability, more than innovative and adaptive capabilities, has the highest frequency of DCs, which emphasizes the importance of extracting and maximizing new information. Therefore, in practice, MSBs seeking to be invulnerable to unpredictable and frequent change in the business environment should develop the ability to access, extract and process up-to-date information promptly. Digital skills trainings and new DTs could be helpful to MSB managers/owners in this regard. In particular, the development of homegrown business management apps, like a one-stop-shop, mini-Enterprise Resource Planning app may go a long way to enhance DCs of MSBs.
- Third, whilst the collective DCs of MSBs remain the same, interpretive reflections on the *blueprint* of the DC framework suggests each MSB uniquely explores opportunities by manifesting different combinations of DC constructs and DTs, at varying levels. Therefore, entrepreneurs and business managers could combine different DCs of MSBs we identified at varying degrees towards creating a competitive advantage that could result in positive reconfiguration of business resources to maximize more opportunities.
- In extreme change situations, such as the pandemic, this study suggests MSBs were motivated to adopt DTs that promote electronic (online/mobile) payments more than other DTs. This finding, indirectly, opens doors of financial inclusion, and business formalization to many MSBs in the informal sector. Moreover, it encourages the development of indigenous IT solutions that could feed the technology appetites of MSBs;

and in so doing, this study advances the UN SDG 8.10 on financial inclusion and SDG 8.3 on “entrepreneurship, creativity, and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises” (United Nations, 2020, p. 8) by 2030.

Through this study, we have more knowledge with which we could engage policy makers, entrepreneurs and MSB managers on how to navigate difficult business situations through the DC framework.

## 8 | LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

While this study offers significant insights regarding DC in the case of Ghana, it seems to be limited in the number of respondents involved, and in generalizing the research outcomes. The research participants were drawn from Greater Accra, a metropolitan center, and the capital city of Ghana, which may not represent the narratives of MSBs in other cities and remote areas of Ghana. Moreover, the number of participants interviewed compared to the number of MSBs, MSBs entrepreneurs, and managers in Ghana appears inadequate. Therefore, to generalize the outcomes of our study, it may be instructive to view the DCs and businesses from the lens of formal MSBs operating in urban areas of low-income countries.

In reference to the limitations of this study, we suggest future research on this subject considers more inclusive representations of MSBs from urban cities and rural settlements. Furthermore, the selection of MSBs could cut across (in)formal business sectors in different social, cultural, and religious settings.

## 9 | CONCLUSION

Undeniably, the COVID-19 pandemic has been unprecedented, causing disruptive change to socio-economic aspects of life. However, it also prompts the need for scholars to re-evaluate the knowledge of theories such as the DC framework, and assumptions that guide these theories.

Inspired by the need to support MSBs and help them get through the post covid-challenges, this study *interprets and simplifies* the DC framework by creating a blueprint that clearly suggests how firms such as MSBs could leverage the DC framework in real-world situations. While creating the blueprint, the study revealed the following: (1) 21 DC constructs that MSBs could uniquely leverage on to maximize opportunity and/or minimize threats in unpredictable business environment. (2) Absorptive capability dimension of DC drives adaptive and innovative capabilities, therefore interventions aimed at increasing DCs should focus on absorptive capability – how MSB extract helpful information. (3) Collective DCs of MSBs as a sector did not change during the pandemic; however, MSBs intensified DCs, particularly, the absorptive capabilities dimension of DC and looked for more ways of getting information. (4) MSB adopted several DTs during the pandemic to intensify DC, particularly to gather more information, and adapt to changing environment and innovate business offerings. MSBs adopted mobile/online payments tools during the pandemic in addition to social media and productive DT tools. (5) The MSBs openness to adopt new DTs such as mobile/online banking tools, and other custom-made indigenous tools, potentially increases financial inclusion, formalization of more MSBs in the informal sector, and development of more indigenous DTs solutions that could serve the technology appetites of MSBs and expand the local IT market.

The new knowledge of the DC framework and the use of DTs by MSBs discovered in this study could enhance how policies are formed and executed towards the socio-economic development of low-income countries, particularly, to enhance post-COVID-19 pandemic economic recovery through MSBs and entrepreneurial development.

### DATA AVAILABILITY STATEMENT

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, therefore, raw dataset (other than processed data embedded within the article) is not available.

### ORCID

Adebowale Owoseni  <https://orcid.org/0000-0001-8360-3197>

Sylvester Hatsu  <https://orcid.org/0000-0001-5640-853X>

Adedamola Tolani  <https://orcid.org/0000-0003-1429-0902>

### REFERENCES

- Akpan, I. J., Udoh, E. A. P., & Adebisi, B. (2020). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business & Entrepreneurship*, 0(0), 1–18. <https://doi.org/10.1080/08276331.2020.1820185>
- Al Yahmady, H. H., & Al Abri, S. S. (2013). Using Nvivo for data analysis in qualitative research. *International Interdisciplinary Journal of Education*, 2(2), 181–186. <https://doi.org/10.12816/0002914>

- Albort-Morant, G., Leal-Rodríguez, A. L., Fernández-Rodríguez, V., & Ariza-Montes, A. (2017). Assessing the origins, evolution and prospects of the literature on dynamic capabilities: A bibliometric analysis. *European Research on Management and Business Economics*, 24, 42–52. <https://doi.org/10.1016/j.iedeen.2017.06.004>
- Amankwah-Amoah, J., Boso, N., & Antwi-Agyei, I. (2018). The effects of business failure experience on successive entrepreneurial engagements: An evolutionary phase model. *Group & Organization Management*, 43(4), 648–682. <https://doi.org/10.1177/1059601116643447>
- Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, 11(1), 29–49. <https://doi.org/10.1111/j.1468-2370.2008.00251.x>
- Amoah, C. (2020). Sectoral economic impact of COVID-19 on Ghana's economy, 1(May), 1–9. <https://doi.org/10.13140/RG.2.2.14789.06885>
- Asante, L. A., & Mills, R. O. (2020). Exploring the socio-economic impact of COVID-19 pandemic in marketplaces in urban Ghana. *Africa Spectrum*, 55(2), 170–181. <https://doi.org/10.1177/0002039720943612>
- Biedenbach, T., Müller, R., & Muller, R. (2012). Absorptive, innovative and adaptive capabilities and their impact on project and project portfolio performance. *International Journal of Project Management*, 30(5), 621–635. <https://doi.org/10.1016/j.ijproman.2012.01.016>
- BOI. (2019). MSME's Definition | Bank of Industry, Nigeria. <http://www.boi.ng/smedefinition/>
- Camisón, C., & Monfort-Mir, V. M. (2012). Measuring innovation in tourism from the Schumpeterian and the dynamic-capabilities perspectives. *Tourism Management*, 33(4), 776–789. <https://doi.org/10.1016/j.tourman.2011.08.012>
- Deloitte. (2020). Economic impact of the Covid-19 pandemic on the economy of Ghana economic impact of COVID-19 at a glance.
- Derham, R., & Cragg, P. (2011). Creating value: An SME and social media. Pacific Asia Conference on Information Systems (PACIS).
- Dibrell, C., Davis, P. S., & Craig, J. (2008). Fueling innovation through information technology in SMEs. *Journal of Small Business Management*, 46(2), 203–218.
- Dyduch, W., Chudziński, P., Cyfert, S., & Zastempowski, M. (2021). Dynamic capabilities, value creation and value capture: Evidence from SMEs under Covid-19 lockdown in Poland. *PLoS ONE*, 16(June), 1–28. <https://doi.org/10.1371/journal.pone.0252423>
- Ebitu, E. T., Basil, G., & Ufot, J. A. (2016). An appraisal of Nigeria's micro, small and medium enterprises (MSMES): Growth, Challenges and Prospect. *International Journal of Small Business and Entrepreneurship Research*, 4(4), 1–15.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10–11), 1105–1121. [https://doi.org/10.1002/1097-0266\(200010/11\)21:10/11<1105::AID-SMJ133>3.0.CO;2-E](https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E)
- Faizal, M., Zaidi, A., & Othman, S. N. (2012). Understanding the concept of dynamic capabilities by dismantling Teece, Pisano, and Shuen (1997)'s definition. *International Journal of Academic Research in Business and Social Sciences*, 2(8), 367–378. [www.hrmars.com/journals](http://www.hrmars.com/journals)
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5, 80–92. <https://doi.org/10.1063/1.2011295>
- Fletcher, G., & Griffiths, M. (2020). Digital transformation during a lockdown. *International Journal of Information Management*, 55(June), 102185. <https://doi.org/10.1016/j.ijinfomgt.2020.102185>
- Ghana Statistics Services. (2020). *Consumer Price Index 2020*. [http://46.4.131.90/gssmain/fileUpload/PriceIndices/Newsletter\\_CPI\\_Feb\\_2020.pdf](http://46.4.131.90/gssmain/fileUpload/PriceIndices/Newsletter_CPI_Feb_2020.pdf)
- Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, 21(2), 135–146. <https://doi.org/10.1057/ejis.2011.54>
- Haas, A. (2015). Micro-foundations of dynamic capabilities. The diverse roles of boundary spanners in sensing/shaping and seizing opportunities. *XXIVème Conférence Annuelle de l'Association Internationale de Management Stratégique*, 1–24.
- Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teede, D. J., & Winter, G. S. (2007). *Dynamic capabilities: Understanding strategic change in organizations*. Blackwell Publishing. <http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=34301044&site=ehost-live%5Cnhttp://harvardbusinessonline.hbsp.harvard.edu/relay.jhtml?name=itemdetail&id=12160>
- Henton, D., & Held, K. (2013). The dynamics of Silicon Valley: Creative destruction and the evolution of the innovation habitat. *Social Science Information*, 52(4), 539–557. <https://doi.org/10.1177/0539018413497542>
- Jelilov, G., & Onder, E. (2016). Entrepreneurship in Nigeria realities on ground. *Journal of Business and Finance Management Research*, 2(3), 6–9.
- Juergensen, J., Guimón, J., & Narula, R. (2020). European SMEs amidst the COVID-19 crisis: Assessing impact and policy responses. *Journal of Industrial and Business Economics*, 47(3), 499–510. <https://doi.org/10.1007/s40812-020-00169-4>
- Kasseah, H. (2016). The performance of small firms: Does formality matter? *Journal of Small Business and Entrepreneurship*, 28(6), 431–448. <https://doi.org/10.1080/08276331.2016.1202094>
- Klein, H. H. K., & Myers, M. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 23(1), 67–93. <https://doi.org/10.2307/249410>
- Kuria, T. J., & Kitenga, G. M. (2014). Theoretical underpinnings of dynamic capabilities. *European Journal of Business and Social Sciences P.P*, 3(9), 181–190. <http://www.ejbss.com/recent.aspx>
- MacroTrends. (2020). Ghana GDP 1960–2020 | MacroTrends. <https://www.macrotrends.net/countries/GHA/ghana/gdp-gross-domestic-product>
- Matarazzo, M., Penco, L., Profumo, G., & Quaglia, R. (2021). Digital transformation and customer value creation in made in Italy SMEs: A dynamic capabilities perspective. *Journal of Business Research*, 123(October), 642–656. <https://doi.org/10.1016/j.jbusres.2020.10.033>
- Mitrega, M., & Choi, T. M. (2021). How small-and-medium transportation companies handle asymmetric customer relationships under COVID-19 pandemic: A multi-method study. *Transportation Research Part E: Logistics and Transportation Review*, 148(February), 102249. <https://doi.org/10.1016/j.tre.2021.102249>
- OECD. (1996). Small businesses, job creation and growth: Facts. *Obstacles and Best Practices*. Small, 23, 246–255. [https://doi.org/10.1002/1098-240X\(200006\)23:3<246::AID-NUR9>3.0.CO;2-H](https://doi.org/10.1002/1098-240X(200006)23:3<246::AID-NUR9>3.0.CO;2-H)
- OECD. (2020). Quarterly GDP in volume terms for the G20. <https://www.oecd.org/sdd/na/G20-GDP-Eng-Q317.pdf>
- OECD. (2021). DAC List of ODA recipient for reporting on aid in 2021. <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/DAC-List-ODA-Recipients-for-reporting-2021-flows.pdf>
- Okoli, C., & Schabram, K. (2010). Working papers on information systems a guide to conducting a systematic literature review of information systems research. *Working Papers on Information Systems*, 10(2010), 1–2. <https://doi.org/10.2139/ssrn.1954824>
- Opong, M., Owiredu, A., & Churchill, R. Q. (2014). Micro and small scale enterprises development in Ghana. *European Journal of Accounting Auditing and Finance Research*, 2(6), 84–97.
- Osoimehin, K. O., Jegede, C. A., Akinlabi, B. H., & Olajide, O. T. (2012). An evaluation of the challenges and prospects of micro and small scale enterprises development in Nigeria. *American International Journal of Contemporary Research*, 2(4), 174–185.

- Owoseni, A., & Twinomurizi, H. (2016). Mobile app usage as a dynamic capability in Nigerian start-ups. 2016 IST-Africa Conference, IST-Africa 2016, 1–9. <https://doi.org/10.1109/ISTAFRICA.2016.7530637>
- Owoseni, A., & Twinomurizi, H. (2018a). Mobile apps usage and dynamic capabilities: A structural equation model of SMEs in Lagos, Nigeria. *Telematics and Informatics*, 35(7), 2067–2081. <https://doi.org/10.1016/j.tele.2018.07.009>
- Owoseni, A., & Twinomurizi, H. (2018b). The dynamic capabilities of small and medium-scale enterprises using mobile apps in Lagos, Nigeria. *Electronic Journal of Information Systems in Developing Countries*, 85(July), 1–14. <https://doi.org/10.1002/isd2.12061>
- Ozili, P., & Arun, T. (2020). Spillover of COVID-19: Impact on the Global Economy. Working paper. Available at SSRN: <https://doi.org/10.2139/ssrn.3562570>
- Papadopoulos, T., Baltas, K. N., & Balta, M. E. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and practice. *International Journal of Information Management*, 55(June), 102192. <https://doi.org/10.1016/j.ijinfomgt.2020.102192>
- Parida, V., Oghazi, P., & Cedergrén, S. (2016). A study of how ICT capabilities can influence dynamic capabilities. *Journal of Enterprise Information Management*, 29(2), 179–201. <https://doi.org/10.1108/JEIM-07-2012-0039>
- Pavlou, P. A., & El Sawy, O. A. (2011). Understanding the elusive black box of dynamic capabilities. *Decision Sciences*, 42(1), 239–273. <https://doi.org/10.1111/j.1540-5915.2010.00287.x>
- Perry, N. (1999). The impact of digital technology on Small Businesses in the media industry. *Hispanic Journal of Behavioral Sciences*, 9(2), 183–205. <http://hjb.sagepub.com.proxy.lib.umich.edu/content/9/2/183.full.pdf+html>
- Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of smes during the covid-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 1–22. <https://doi.org/10.3390/joitmc6040104>
- Rashid, S., & Ratten, V. (2021). Entrepreneurial ecosystems during COVID-19: The survival of small businesses using dynamic capabilities. *World Journal of Entrepreneurship, Management and Sustainable Development*, 17(3), 457–476. <https://doi.org/10.1108/WJEMSD-09-2020-0110>
- Reuver, M. De., Sørensen, C., & Basole, R. C. (2018). The digital platform: A research agenda, 124–135. <https://doi.org/10.1057/s41265-016-0033-3>
- Saldana, J. (2009). *The coding manual for qualitative researchers*. ISBN: 9788578110796 Sage Publishers, <https://doi.org/10.1017/CBO9781107415324.004>
- Salmons, J., & Wilson, L. (2009). In J. Salmons & L. Wilson (Eds.), *Handbook of research on electronic collaboration and organizational synergy* (2nd ed.). IGI Global. <https://doi.org/10.4018/978-1-60566-106-3>
- Sein, M. K. (2020). The serendipitous impact of COVID-19 pandemic: A rare opportunity for research and practice. *International Journal of Information Management*, 55(May), 102164. <https://doi.org/10.1016/j.ijinfomgt.2020.102164>
- Skjott Linneberg, M., & Korsgaard, S. (2019). Coding qualitative data: A synthesis guiding the novice. *Qualitative Research Journal*, 19(3), 259–270. <https://doi.org/10.1108/QRJ-12-2018-0012>
- St John, W., & Johnson, P. (2000). The pros and cons of data analysis software for qualitative research. *Journal of Nursing Scholarship*, 32(4), 393–397. <https://doi.org/10.1111/j.1547-5069.2000.00393.x>
- Teece, D., & Pisano, G. (1994). The dynamic capabilities of firms: An introduction. *Industrial and Corporate Change*, 3(3), 537–556. <https://doi.org/10.1093/icc/3.3.537-a>
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. <https://doi.org/10.1002/smj.640>
- Teece, D. J. (2012). Dynamic capabilities: Routines versus entrepreneurial action. *Journal of Management Studies*, 49(8), 1395–1401. <https://doi.org/10.1111/j.1467-6486.2012.01080.x>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533. <http://links.jstor.org/sici?sici=0143-2095%28199708%2918%3A7%3C509%3ADCASM%3E2.0.CO%3B2-%23>
- The Bank Association South Africa. (2016). How does the National Small Business act Define SME. *He Bank Association South Africa*. <http://www.banking.org.za/what-we-do/sme/sme-definition>
- Ulas, D. (2019). Digital transformation process and SMEs. *Procedia Computer Science*, 158, 662–671. <https://doi.org/10.1016/j.procs.2019.09.101>
- UNDP. (2020). 50 homegrown African innovations tackling COVID-19. New York.
- United Nations. (2020). Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development. [https://unstats.un.org/sdgs/indicators/GlobalIndicatorFrameworkafter2019refinement\\_Eng.pdf%0Ahttps://unstats.un.org/sdgs/indicators/GlobalIndicatorFramework\\_A.RES.71.313Annex.pdf](https://unstats.un.org/sdgs/indicators/GlobalIndicatorFrameworkafter2019refinement_Eng.pdf%0Ahttps://unstats.un.org/sdgs/indicators/GlobalIndicatorFramework_A.RES.71.313Annex.pdf)
- Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *The International Journal of Management Reviews*, 9(2007), 31–51. <https://doi.org/10.1111/j.1468-2370.2007.00201.x>
- Wang, Y., & Shi, X. (2011). Thrive, not just survive: Enhance dynamic capabilities of SMEs through IS competence. *Journal of Systems and Information Technology*, 13(2), 200–222. <https://doi.org/10.1108/13287261111136016>
- Weaven, S., Quach, S., Thaichon, P., Frazer, L., Billot, K., & Grace, D. (2021). Surviving an economic downturn: Dynamic capabilities of SMEs. *Journal of Business Research*, 128(February), 109–123. <https://doi.org/10.1016/j.jbusres.2021.02.009>
- World Health Organisation. (2021). COVID-19: Ghana Situation. <https://covid19.who.int/region/afro/country/gh>

## AUTHOR BIOGRAPHIES

**Dr. Adebowale Owoseni** is a Senior Lecturer in Information Systems at the School of Computer Science and Informatics, De Montfort University, UK. Also, he is a researcher with the Centre for Computing and Social Responsibility at the University. Prior, he functioned in different digital transformation related roles in the industry for 13 years. He leverages significant industry experience and finds fulfillment in teaching and researching subjects that speak to societal impacts of business computing, digital technologies, and digital transformation.

**Dr. Sylvester Hatsu** is an industrious and knowledgeable IT Professional with more than 14 years' experience in strategic management and deployment of complex IT systems. He is the Director of Information Communication Technology, Accra Technical University, Ghana. In



Addition, he is a Senior Lecturer with the department of Computer Science at the University. His research interests consider digital transformation, cyber security, computer ethics, privacy, and data protection in low-income country context.

**Dr. Adedamola Tolani** is an IT professional with extensive experience in digital transformation, information systems, service management, process re-engineering and automation, and technology advisory. He is currently the CIO at AppZone Limited, Nigeria. Adedamola has over 13 years' experience in the Information Technology and financial services industries; establishing standards to achieve best practice, and developing strategies to create an operational efficient people, systems, and processes through digital technologies.

**How to cite this article:** Owoseni, A., Hatsu, S., & Tolani, A. (2022). How do digital technologies influence the dynamic capabilities of micro and small businesses in a pandemic and low-income country context? *The Electronic Journal of Information Systems in Developing Countries*, 88(2), e12202. <https://doi.org/10.1002/isd2.12202>

## APPENDIX A.

Interview questions and construct/variable maps

**TABLE A1** Interview questions

Question ID	Questions
Q1	Please, briefly describe your business.
Q2	How long have you been operating the business and how many employees do you have?
Q3a	How you identify new business opportunities?
Q3b	What digital technologies (such as computers, mobile apps etc.) make it easier for you to identify these opportunities?
Q4a	How do you make the best out of (maximize) latest information?
Q4b	What digital technologies (such as computers, mobile apps etc.) make it easier for you to make sense of this information?
Q5a	How do you create new (or improve existing) products and services?
Q5b	What digital technologies (such as computers, mobile apps etc.) make it easier for you to create or improve your products and services?
Q6	In your opinion, how do new business opportunities, latest information or new products and services affect your business?

**TABLE A2** How interview questions map to constructs and variables

Construct/variables	Question ID that map to construct/variables
Demographic variables	Q1, Q2
Adaptive capability	Q3a
Absorptive capability	Q4a
Innovative capability	Q5a
Resource shift	Q6
Digital technologies	Q3b, Q4b, Q5b