

The impact of improvisational and dynamic capabilities on business model innovation during COVID-19: a composite-based approach

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Abstract. Dynamic capabilities embody various capabilities that drive the organization's adaptiveness and are studied from management and information systems perspectives. However, the impact of specific dynamic and organizational capabilities, i.e., management system adaptability and improvisational capabilities, on business model innovation under tumultuous times still has to be unfolded. Therefore, this study investigates the role of these capabilities during the COVID-19 crisis. This study presents the results of analyses on obtained survey data ($N=105$) from Ghana and shows that these two strategic capabilities significantly influence business model innovation. Also, this study shows that business model innovation positively influences organizational performance under COVID-19. These results extend the current knowledge base of dynamic and organizational capabilities while offering implications for practice. We also offer various practical recommendations that help overcome business model innovation challenges during tumultuous times.

Keywords: management system adaptability, improvisational capabilities, dynamic capability, business model innovation, organizational performance under COVID-19, composite-based SEM

1 Introduction

At the beginning of the COVID-19 pandemic, many organizations faced a downturn due to multiple challenges. Some notable adverse effects of this downturn include shareholder distress, a substantial drop in customer and consumer demand, an increase in the cost of capital in tightening credit markets, and even a decline in asset value due to a lack of visibility when employees do not come to locations as much as before. Under these tumultuous conditions, organizations typically focus on improving plans and actions on tactical or functional levers [1].

However, many organizations miss substantial business opportunities through structural complexity reduction and effective and innovative business model use [2].

Business models depict the content, structure, and governance of transactions designed to create value by exploiting business opportunities [3, 4]. Each organization has a business model [5]. Some, however, have not clearly articulated and documented this. Typically, a business model describes the organization's value propositions (products/services, offerings), profit formula, the organization's key resources (e.g., people, process, technology, and support) the processes needed for execution and collaboration [6]. In essence, business models can be considered a driving force in the organization's business operations that are in line with what customers want, how people can do their work most efficiently and with the proper behavior [7]

It is well known that different levels of innovation ambition require different people, motivational factors, and organizational support systems [8, 9]. A key focal point in innovation concerns business model innovation [10]. Business model innovation allows firms to address down-turn events by changing their core value proposition to customers and their underlying operating model [3]. The degree to which an organization's business model innovation is being rolled out can be boldly classified into three levels of ambition. The first is the primary 'creation' of incremental enhancement of products and services. The second is adjacent 'sustaining innovation,' which focuses on leveraging offerings and value propositions into a new space. Finally, the third one is the 'transformational' level that embraces the development of new offers to customers and possibly even new businesses to serve markets and customer needs that may not yet exist [6].

Many organizations cannot achieve business benefits from their business model innovation when they re-balance the innovation portfolio from core to fundamental and subsequently to the transformational level. One reason why this is so is that these firms lack essential organizational resources, capabilities, and key processes to be truly transformative in their business model [4, 6, 10]. Hence, we argue that organizations capable of orchestrating their organizational resources and addressing down-turn events by changing their core value proposition will successfully achieve business model innovation and high levels of organizational performance.

To this end, we embrace the suitable dynamic capabilities view (DCV) as a lens to investigate this particular claim [11]. Moreover, Teece [4] argues that it is crucial to understand the contribution of dynamic capabilities to achieving business model innovation, as current scholarly contributions are predominately theoretical.

Hence, this study investigates the key role of two particular organizational capabilities, i.e., management system adaptability, as dynamic capability [12, 13] and improvisational capabilities [3, 14], as drivers of business model innovation. These crucial capabilities enable a firm's offerings and competitive position, and these capabilities are created through configurations of assets and activities where processes and people (professionals) are combined, controlled, and interconnected. These organizational capabilities bridge the firm's strategic objectives, ambitions, and day-to-day activities.

Against this background, we define the main research question: *"To what extent do management system adaptability and improvisational capabilities influence business model innovation, and what is the subsequent impact on organizational performance under COVID-19?"*

This paper is organized as follows. First, we outline the theory and position the framework with associated hypotheses. Then, we outline the methods, after which we present the core results of this study. Finally, the current paper ends with a discussion, including theoretical and practical contributions.

2 Theory and the study's framework

2.1 Capability perspective, dynamic and improvisational capabilities

We ground this study in the DCV. This theory provides scholars and leaders with insights into how to adapt firms under turbulent conditions and adjust their operating base with processes and technologies in line with the market demands [4, 14]. This theory starts with the notion of a ‘capability.’ A capability can be regarded as aggregating several underlying elements that refer to tangible and intangible assets firms use to develop and implement the business strategy [15]. Think, for instance, about competencies (i.e., individual employee skills), business processes that produce a particular output, knowledge systems, and partnerships (i.e., the interfaces with key participants an organization needs to produce outputs) [15, 16].

The combination of these individual aspects gives an organization a particular capability. However, unfortunately, there is often confusion between capabilities and competencies. This is because capabilities are always associated with the organizational level; competencies and skillsets, in essence, describe an individual.

In this research context, we focus on specific capabilities, i.e., dynamic and improvisational capabilities. Hence, we follow Wang and Ahmed [17] and define dynamic capabilities as ‘...the firm’s behavioral orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage.’ A crucial unique dynamic capability is the firm’s adaptive capability (next to, for instance, absorptive capacity and innovation capability) which is considered the ability of a firm to reconfigure resources, coordinate processes, and effectively address changes in the business environment [4, 13, 18-20].

This research focuses on a specific dimension of adaptive capability, namely the management system adaptive capability [13]. Hence, this particular capability is essential for firms as it encourages employees and managers to challenge outmoded practices across the organization and allows a firm to respond to changes in the market adequately [13, 21].

The extant literature distinguishes between dynamic capabilities and improvisational ones [14]. Hence, improvisational capabilities denote repetitively engaging in improvisational actions without formal planning by building innovative products and solutions to enhance operational and competitive benefits [3, 22]. Improvisational capabilities operate as a “third hand,” according to Pavlou and El Sawy [14], next to ‘planned’ dynamic and operational (zero-order) capabilities—that drive the present business operations—as a driver of change, adaption, and innovation during tumultuous times [23].

2.2 Hypotheses development

We adopt a complementarity and ambidexterity perspective, claiming that the simultaneous execution of two seemingly opposing capabilities, i.e., improvisational and dynamic capabilities, complement each other to collectively achieve business model innovation during crises. This idea resonates well with Mintzberg's 'intended' versus 'emerging' strategy [24].

Consistent with prior research on innovativeness that shows that dynamic capabilities drive the use of the new technological innovations and enable business process innovations [25-28], we now argue that management system adaptability, as a dynamic capability, drives the firm's business model innovation. It does so by actively reducing inefficient coordination and control mechanisms across the organization and encouraging communication and information flow among the organization's teams and employees [13, 21]. In this regard, organizations that have managerial systems that are flexible and adaptive can better challenge outmoded traditions and practices, respond faster to shifts in the market and harness the organization-wide skills and competencies necessary to innovate [13, 21, 25]. Moreover, management systems adaptability is especially crucial during sudden disruptions, like the COVID-19 pandemic, as firms must react and adapt to changing customer demands and behaviors, seize business and technological opportunities and embrace new service innovations [20, 25, 26, 29].

Based on the above, we define the following:

Hypothesis 1 (H1): *Management systems adaptability positively impacts business model innovation during COVID-19.*

The nature of improvisational capabilities is different from dynamic capabilities. First, they are 'emergent' and enable firms to take action spontaneously rather than based on rigorous planning. Pavlou and El Sawy [14] summarize this well as they argue that these capabilities help firms to "...spontaneously reconfigure existing resources to build new operational capabilities to address urgent, unpredictable, and novel environmental situations." Second, under conditions of high uncertainty where there is no time for organizational resource planning, these capabilities are crucial as they offer firms the reflexive instincts and needed improvisational activities to adapt and respond to the problems using the resources available [22, 30, 31]. Hence, improvisational capabilities provide firms with the necessary skillset to adapt the firm's products, propositions and services, delivery channels, and technological platforms and support the way customer transactions are done [3, 4, 14, 22].

Management systems adaptability and improvisational capabilities collectively allow organizations to foresee trends, developments clearly, and market disruption, deeply understand market dynamics, and adjust accordingly. Furthermore, they enable firms to use combinations of resources (people, processes, technology) for new business operations, allowing firms to quickly respond to market and business changes and drive business model innovation [3, 13, 14, 21]. Synthesizing from the above, we define the following hypothesis:

Hypothesis 2 (H2): *Improvisational capabilities positively impact business model innovation during COVID-19.*

Deducting from our theoretical framework, we argue that business model innovation is a crucial antecedent to achieving high levels of organizational performance. For example, business model innovation is a key enabler for organizations to efficiently deliver excellent services, offerings, and value to their customers through new digital technologies and online channels [5, 6]. In addition, especially during times of high uncertainty, customers want mobility in product and service delivery and a seamless service experience that ultimately results in high customer satisfaction [32, 33].

Business model innovation allows firms to address down-turn events like COVID-19 by changing their core propositions to customers and the firm's underlying operating model [3, 34]. Also, business model innovation drives an organization's growth ambitions (e.g., high profitability, increased market share) by transforming the organization's (go-to) markets and segments and the way the business operations can be scaled and deliver high-quality personalized services [4, 6, 35, 36]. The organization can accelerate new revenue streams through business model innovation so that opportunities can be capitalized cost-effectively [29-32, 37, 38].

In addition, research has shown that business model innovation will substantially impact the firm's competitiveness and value-creation processes for the organization [8, 39]. Finally, we define:

Hypothesis 3 (H3): *Business model innovation positively impacts organizational performance during COVID-19.*

3 Methods and composite-based analyses

We used an online survey anonymously and conveniently distributed it among SMEs in Ghana through our professional and educational network. In addition, we targeted senior business practitioners, like chief executive officers, chief information officers, chief digital officers, and IT managers. The data collection process was performed between 8th April and 20th May 2020. After removing incomplete and inadequate responses, our sample size was 105 SMEs.

We adopted previously empirically validated measures for all constructs of the framework. We adopted four items from [3] to measure the firm's capability to engage in improvisational actions without formal planning, i.e., improvisational capabilities, and three items from [12, 13] to measure the firm's management system adaptability.

In addition, we used nine indicators from [3, 9] to measure business model innovation. Finally, we adopted five measures from [23, 40] to measure organizational performance during COVID-19 and evaluate performance from a broad and balanced perspective. All measures are included in the Appendix.

We used structural equation modeling (SEM) as the preferred analysis method to test the hypotheses. Specifically, we use composite-based SEM, a variance-based approach that uses weighted linear combinations of measurable items as proxies for un-

derlying theoretical conceptualizations [41]. This approach to SEM handles both emergent variables (composite-formative measurements) and latent variables (reflective measurement and common factor model) [42]. Therefore, it is considered a full estimator to SEM used in various types of research, including exploratory research and relationship assessment between different proxies, confirmatory research, and predictive research [43]. Furthermore, composite-based SEM works well with relatively small sample sizes, as in our work, has less strict requirements concerning multivariate normality, and offers model specification and requirement flexibility [44, 45]. Finally, composite-based SEM allows scholars to extend existing theory by examining the model’s ability to predict instead of establishing model fit only, as in covariance-based SEM [45, 46].

We use ADANCO 2.3 as the analysis tool [41], and all constructs are operationalized as latent variables, thus representing (reflective) common factor models. Moreover, compared to other composite-based tools like SmartPLS or WarpPLS, ADANCO offers the possibility to assess the overall goodness of fit [42, 47].

4 Empirical results and interpretation

Before we tested the core hypotheses of this work, we assessed the model fit. Table 1 outlines the key results of this assessment. Using ADANCO, model fit is assessed through three related metrics [42]. The first one is SRMR (Standardized root mean squared residual). This metric describes how the empirical correlation matrix differs from a model-implied correlation matrix. In addition, the software provides bootstrap-based outcomes for HI95 and HI99 percentiles. So, if the SRMS goes beyond these two values, it is improbable that the model is true. The other two metrics, d_{ULS} (unweighted least squares discrepancy) and d_G (geodesic discrepancy), are other metrics to unfold the extent to which the empirical correlation matrix differs from the model-implied variant.

As can be seen from the Table beneath, all obtained values are below HI99-values, suggesting an appropriate model fit. The hypotheses can now be tested.

Table 2. Goodness of fit assessment

| Goodness of model fit (saturated model) | | | | |
|---|--------------|-------------|-------------|-------------------|
| | Value | HI95 | HI99 | Conclusion |
| SRMR | 0.0688 | 0.0631 | 0.0690 | Supported |
| d_{ULS} | 1.0946 | 0.9196 | 1.1007 | Supported |
| d_G | 0.8037 | 0.8573 | 0.9965 | Supported |

Figure 1 shows the outcomes of the structural model assessment using ADANCO. This Figure includes the software’s obtained beta coefficients (i.e., estimates from the regression analyses), t -values (i.e., the coefficient divided by the associated standard error and also showing the importance of the construct in the model), and coefficient of determination (R^2), that shows the amount of variation in the respective outcomes (dependent variables).

As the Figure shows, all hypotheses can be accepted as the beta coefficients were significant. We also controlled these outcomes by including “size” and “industry” in the model. These variables had no significant impact on the outcomes (size: $\beta = -0.004$, $t = 0.353$, $p = 0.93$) and “industry” ($\beta = -0.056$, $t = 0.204$, $p = 0.58$).

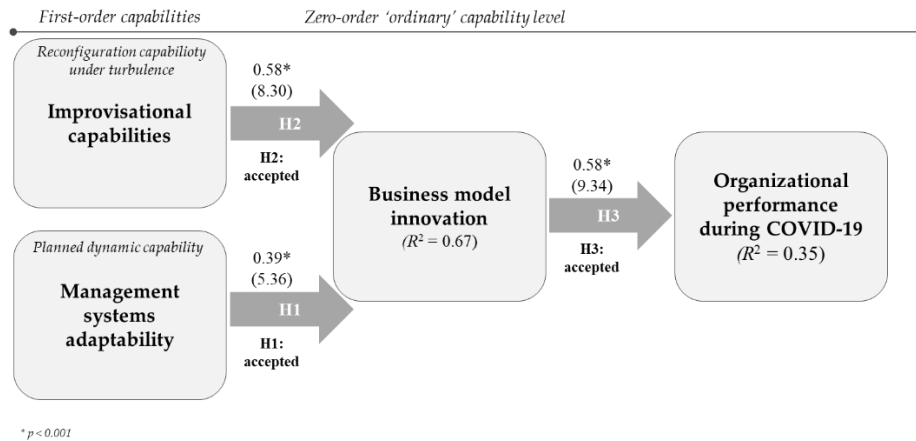


Fig. 1. Results of the structural models.

5 Discussion

It goes without saying that under tumultuous times, firms must reframe how they position their offerings in the marketplace and how they interact with customers. This work tried to unfold whether or not two strategic capabilities collectively drive the firm’s business model innovation that serves as the foundation for achieving high levels of organizational performance under COVID-19. Outcomes of this work using a composite-based approach showcased that both improvisational capabilities and management systems adaptability are critical drivers of business model innovation. We also showed that business model innovation positively influences organizational performance under COVID-19. These outcomes have several theoretical and practical implications, which will be discussed next.

Building upon the foundations of the DCV, we argued that two strategic capabilities could profoundly impact organizational success. This study proposed that planned (management systems adaptability) and improvisational capabilities positively impact business model innovation. We found evidence for the study’s main proposition and thereby extended work by [14] by showing the collective impact that planned and improvisational capabilities can have on business model innovation. However, based on this work’s outcomes, it is evident that improvisational capabilities have a more substantial impact than management systems adaptability. It could be that the planned dynamic capabilities’ effect is weaker under highly tumultuous conditions like the current COVID-19 pandemic, whereas the effect of improvisational capabilities is more substantial, as argued by Pavlou and Sawy [14]. With these outcomes, we also adhere to

the call by Teece [4] that scholars should investigate the contributions of dynamic capabilities to business model innovation.

We also add the body of knowledge on innovation and managing down-turn events [4, 6, 10, 21]. Specifically, this work now shows how business model innovation driven by strategic capabilities can drive high levels of organizational performance during a global pandemic like COVID-10. Hence, we stress that organizations capable of orchestrating their organizational resources and addressing downturn events by making specific changes to their core value proposition will successfully achieve business model innovation and high levels of organizational performance.

Next to theoretical contributions, we also outline some implications of this work for practice. Hence, we argue that organizations that excel in their business model innovation should embrace a strategic approach using an integrative process of project management and dynamic resource allocation; and an organizational model that establishes the right capabilities, metrics, incentives, decision rights, and responsibilities.

Also, decision-makers should develop dynamic capabilities to proactively identify, manage, and evaluate a wide range of new businesses, projects, opportunities, and risks.

Moreover, these capabilities enable the organization to challenge the status quo and leave outmoded traditions and practices. Also, firms should actively engage in improvisational activities and allow a firm to respond quickly to changes in the market. Hence, business model innovation and its subsequent impact on performance must start with and be guided by a clear set of choices that connect to the overall firm and even department and business unit strategies.

This study has several limitations that future work could address. First, we currently only collected data from Ghana, possibly inhibiting the generalization of these outcomes to developed countries, even though we expect that the outcomes will be generalizable to other emerging countries. Second, the theoretical model only included dynamic and improvisational capabilities as an antecedent of business model innovation.

Apart from the discriminant validity tests, showing the distinctiveness of each construct, Pavlou and El Sawy [14] argue that planned and dynamic capabilities can have different relationships with their antecedents (e.g., IT system support or flexibility), their outcomes (consequences), and possible moderating constructs like the technological or market turbulence. Future work could investigate these particular relationships.

Third, we only focused on a particular dimension of adaptive capability: the management system adaptability [13]. The DCV embraces various capabilities, including sense and respond capabilities, knowledge processes, digital dynamic capability, and strategic flexibility [13, 20, 21, 48-51]. Thus, future work can also unravel the contributions of organizational capabilities to business model innovation.

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Appendix A: Measurement items

Improvisational capabilities

(7-point Likert Scale, 1 = Strongly disagree, 7 = Strongly agree)

To what extent do you agree with the following statements?

- IMP1: We apply combinations of business and IT resources at hand to pursue new strategic initiatives such as entering a new market
- IMP2: We apply combinations of resources at hand for new business operations
- IMP3: We apply combinations of resources at hand for expansion
- IMP4: We apply combinations of resources at hand to create new products or services

Management system adaptability

(7-point Likert Scale, 1 = Strongly disagree, 7 = Strongly agree)

To what extent do you agree with the following statements?

- MSA1: The management systems in this organization encourage people to challenge outmoded traditions/practices/sacred cows
- MSA2: The management systems in this organization are flexible enough to allow us to respond quickly to the current changes in our markets
- MSA3: The management systems in this organization evolve rapidly in response to shifts in our business priorities

Business model innovation

(7-point Likert Scale, 1 = Strongly disagree, 7 = Strongly agree)

Please indicate your firm's capabilities relative to competition for each of the following:

- BMI1: Our business model offers new combinations of products, services, and information
- BMI2: Our business model attracts a lot of new customers
- BMI3: Our business model attracts a lot of new suppliers and partners
- BMI4: Our business model bonds participants together in novel ways
- BMI5: Our business model links participants to transactions in novel ways
- BMI6: We frequently introduce new ideas and innovations into our business model
- BMI7: We frequently introduce new operational processes, routines, and norms into our business model
- BMI8: We are pioneers of the business model
- BMI9: Overall, our business model is novel

Organizational performance during COVID-19

(7-point Likert Scale, 1 = Strongly disagree, 7 = Strongly agree)

For the past few weeks, our company, relatively to our main competitors in the same industry (for non-competing governmental agencies, you could also read competitors as 'other ministries or departments'), has been able to maintain or increase:

- OP1: Customer satisfaction
- OP2: Business brand and image
- OP3: Customer loyalty
- OP4: Market share
- OP5: Profitability