COVID-19 uncertainties, dynamic capabilities and the strategic response of multinational enterprises

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Abstract

Purpose – This study aims to examine uncertainties created due to the pandemic that multinational enterprises (MNEs) had to confront. It also assesses MNEs' response to these uncertainties through their dynamic capabilities (DCs). It relied on theories of DCs and organizational learning.

Design/methodology/approach – MNEs listed in Fortune Global 500 served as the population of the study, while data were retrieved from their respective corporate websites. The final phase generated 704 documents systematically analyzed for dialogic communication. Content analysis was used to make inferences.

Findings – This study found six distinct uncertainties created by COVID-19. Furthermore, it was found that irrespective of industry-type or headquarters location, organizations could transform their internal processes and remain resilient by strategically sensing and responding to exogenous shocks through DCs.

Research limitations/implications – The use of dialogic communication through website analysis could be prone to misrepresentations and data exaggeration from organizations. However, this limitation was mitigated by focusing on Fortune Global 500 MNEs, which are reputable global corporations.

Practical implications – Dealing with and coping with the uncertainties created by COVID-19 presents MNEs with valuable capabilities and experience in handling future global viral diseases when they inevitably occur.

Originality/value – Unlike previous shocks, COVID-19 had an immeasurable global disruption to MNEs' business operations. Evidence was found that MNEs could remain resilient by using DCs in response to uncertainties amid an exogenous shock. It makes a theoretical contribution by extending what was previously known about DCs, uncertainties and exogenous shocks.

Keywords Dialogic communication, Organizational learning, COVID-19, Exogenous shocks

Paper type Research paper

1. Introduction

Several studies have examined the response of multinational enterprises (MNEs) to exogenous shocks and extreme events. A few examples are the massive popular revolts in the Middle East (*Arab Spring*) (Darendeli and Hill, 2016), the September 11, 2001 (9/11) terrorist attacks (Li and Tallman, 2011), industrial disasters (Pek *et al.*, 2018) and global financial crisis of 2008 (GFC '08)

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(Witcher and Chau, 2012). Through the lens of these studies, we can better appreciate how MNEs respond to and behave when confronted with exogenous shocks (Jones, 2022). Despite these efforts, studies on exogenous shocks due to viral infectious diseases and their effect on MNEs have been underexplored in international business and strategic management literature. They need further examination (Earl and Rose, 2022). Recent viral infectious diseases such as severe acute respiratory syndrome (SARS) and Ebola provided a glimpse into MNEs' response (Amankwah-Amoah, 2016; Tan and Enderwick, 2006). However, the spread and impact of these viral outbreaks were primarily restricted to regions in Asia and Africa (Gates, 2020). This is unlike the Coronavirus disease of 2019 (COVID-19), which created numerous unanticipated uncertainties and massive global disruptions.

Arguments have been made that dynamic capabilities (DCs) could help organizations manage uncertainties better (Dagnino *et al.*, 2021; Zahra *et al.*, 2022). Additionally, it has been suggested that organizations could remain competitive during and after extreme events by using DCs to overcome such crises (Fainshmidt *et al.*, 2017; Wilhelm *et al.*, 2015). However, little is known about how MNEs use DCs to respond to exogenous shocks or black swans, such as a disruptive global healthcare crisis. The response of MNEs to the myriad of uncertainties created by the pandemic represents a gap that this study fills. This article sought to understand the uncertainties MNEs had to deal with in light of COVID-19 and how they responded to it by using DCs. The study relied on organizational learning from previous exogenous shocks and DCs theory to make the case that when MNEs are confronted with uncertainties created by exogenous shocks, they could use DCs to remain resilient. Thus, this study makes a theoretical contribution concerning DCs and extends what was previously known about DCs, uncertainties, and exogenous shocks. The study contributes to international business and strategy literature in several ways.

One, it identified novel uncertainties and challenges that MNEs could confront during a global viral disease outbreak. MNEs are traditionally accustomed to exogenous political, cross-border, economic, foreign exchange, technological, and environmental uncertainties. However, this study identified six distinct uncertainties. Uncertainties, such as macroeconomic, institutional, and work, are usually present when extreme events occur. Nonetheless, this study found three other uncertainties – health and safety, social and informational – that appear to be uniquely associated with COVID-19 and perhaps other past epidemics.

Two, this study found evidence to support the notion that MNEs could remain resilient by using DCs in response to uncertainties created by a disruptive global healthcare crisis. It appears to be one of the first studies to assess MNEs' response to a disruptive global pandemic. Also, the study highlights the ability of MNEs to quickly sense opportunities or threats during an exogenous shock such as a pandemic, seize opportunities or neutralize threats and transform their internal processes to align with a rapidly changing external environment. Further, strategic responses of MNEs to unanticipated uncertainties did not depend on their respective industry type or headquarters location.

Three, this study makes a methodological contribution to international business and strategic management literature. Analysis of MNEs' websites for dialogic communication is prevalent in the public relations domain. However, a different methodological approach became necessary because of the need to understand MNEs' real-time responses to a global pandemic and based on calls for innovative, nontraditional data sources when studying crises (Budhwar and Cumming, 2020; Buchanan and Denyer, 2013; Jones, 2022).

The rest of the study is structured as follows. First, the relevant literature is reviewed in the next section, and related research questions are formulated, followed by the methodological approach adopted. Next, findings and discussion are elaborated while the study concludes with contributions to extant literature. Finally, theoretical and managerial implications are highlighted, and directions for future research are offered.

2. Theoretical background and research questions

2.1 Previous exogenous shocks and organizational learning of multinational enterprises

Exogenous shocks create massive business disruptions and additional financial costs for MNEs because they are unforeseen external events (Pek *et al.*, 2018). They are either induced by natural causes or human actions (Oh *et al.*, 2020). Such events from natural causes include earthquakes, hurricanes, tsunamis, epidemics and pandemics, while products of human activities have been responsible for terrorist attacks, industrial accidents, wars and mass uprisings. Over the years, these shocks have provided organizational or experiential learning for MNEs regarding their preparedness for similar future incidents (Li and Tallman, 2011; Oh *et al.*, 2020).

For example, the oil shocks of 1973 and 1979 were two waves of exogenous shocks caused by wars that had consequential reverberations globally and affected MNEs adversely, especially those in the oil industry (Blanchard and Gali, 2007; Ikenberry, 1986). In those seven years, crude oil prices increased by 500% and caused massive stagflation and low economic growth for most industrialized economies (Ikenberry, 1986). To cope with future oil shocks and uncertainties, MNEs developed multiple adjustment strategies. The strategies included investments in reserves and minimal oil thresholds, control or partial control of the oil supply chain, and a shift in dependence on oil to more sustainable energy alternatives (Blanchard and Gali, 2007).

Similarly, GFC '08 presented MNEs with numerous challenges and opportunities to learn and prepare for future contingencies (Chau *et al.*, 2012). For example, the crisis led to massive job losses, insurance claims and liquidity squeeze/credit crunch, which eventually resulted in: the bankruptcy of companies like Lehman Brothers, WA Mutual and IndyMac Bancorp; the federal takeover of American International Group, Fannie Mae and Freddie Mac; nationalization of Northern Rock by the British government; acquisition of Merrill Lynch by Bank of America; and Federal Reserve guaranteeing Bear Stearns' bad loans before it was eventually acquired by JP Morgan Chase (USA Today, 2013). In addition, the experience of rising interest rates, mortgage payment defaults and managing financial uncertainties created by GFC '08 increased organizational alertness and preparedness in handling future financial crises (Witcher and Chau, 2012).

Also, organizations directly affected by the 9/11 terrorist attacks acknowledged that their responses included crisis management, employee concern, financial liquidity, and business continuity (Greenberg, 2014). In the same vein, Mithani *et al.* (2020) found that compared with non-US firms in the aftermath of the 9/11 terrorist attacks, US corporations perceived higher threats due to spatial proximity and an assumption of reoccurrence. The experience of US firms from the traumatic event led to an increase in the frequency of inter-organizational alliances through the deployment of slack resources. Such alliances were to help organizations jointly develop effective plans to confront future uncertainties and overcome vulnerabilities together (Mithani *et al.*, 2020).

Before the COVID-19 pandemic, outbreaks of epidemics across the world presented organizations with unique uncertainties (Amankwah-Amoah, 2016). Viral epidemics such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), avian influenza/bird flu (H5N1), swine flu (H1N1) and Ebola are a few of the infectious diseases that have provided organizational learning in the recent past (Gates, 2020). In their study of the effect of SARS on international business, Tan and Enderwick (2006) argued that organizations had since learnt to embrace scenario-based planning rather than a linear growth assumption based on traditional planning. It was advanced that contemplating a variety of outcomes allowed MNEs to have better contingent-based continuity plans and prepare for unanticipated events (Tan and Enderwick, 2006). Furthermore, Amankwah-

Amoah (2016) found that organizations exposed to the Ebola outbreak became more resilient after passing through three phases of environmental scanning, retrenchment strategy and recovery. Apart from organizational resilience (Amankwah-Amoah, 2016), firms can also use DCs when confronted with uncertainties from exogenous shocks (Zahra *et al.*, 2022).

2.2 Dynamic capabilities perspective

DCs theory is relevant in this study because it explains organizational behaviour in response to changes and development in the external business environment (Petricevic and Teece, 2019; Teece, 2020). DC is described as an organization's unique ability to develop, renew, reconfigure and deploy internal and external strategic competencies to stay ahead of the competition, especially in rapidly changing environments (Schoemaker *et al.*, 2018; Teece, 2014a, 2014b; Teece *et al.*, 1997). It is "a meta-routine designed to improve a company's operating routines" (Wilhelm *et al.*, 2015, p. 328). Along with managerial decision-making, the ability of firms to design and redesign, develop, implement and modify these operating routines is what gives them the capabilities to respond to external changes and remain competitive.

One common theme in the literature on DC is its three integral components, which act as organizational processes. They are sensing (and shaping) opportunities and threats, seizing opportunities and transforming or renewing the firm (Schoemaker *et al.*, 2018; Teece, 2007; Warner and Wäger, 2019). These three DC components have been described as higher-level capabilities which allow MNEs to respond quickly to changing environments (Petricevic and Teece, 2019; Teece, 2020). Ultimately, this enables firms to get the opportunity to maintain evolutionary fitness and resilience concerning the external business environment (Teece, 2014a, 2014b, 2018; Zahra *et al.*, 2022). Thus, when exogenous shocks such as the COVID-19 pandemic occur and create unprecedented disruptions and unanticipated uncertainties for MNEs' efficient business operations, they need to respond by sensing opportunities and threats associated with the pandemic, eventually seeking continuous internal improvement and organizational transformation.

2.3 Unanticipated uncertainties created by COVID-19

MNEs operate in a volatile, uncertain, complex and ambiguous (VUCA) environment (Calabrò *et al.*, 2022), and it is not uncommon for them to develop the requisite resources, competencies, innovation and experience to operate effectively in VUCA worlds (Amankwah-Amoah *et al.*, 2021; Van Tulder *et al.*, 2022). Furthermore, depending on the crisis, organizations could manage uncertainties to the best of their experience with the previous occurrence. Thus, crises and disasters could prove valuable for organizations, especially if the uncertainties and processes provide experiential learning, which could be used when future crises occur (Van Tulder *et al.*, 2022).

Unfortunately, the COVID-19 pandemic is peculiar and different from previous exogenous shocks, such as the oil shocks of the 1970s, GFC '08, the 9/11 terrorist attacks, and industrial disasters, which provided experiential learning to MNEs, to certain degrees. It is emphasized that there have been viral epidemics in the recent past. Epidemics such as SARS, MERS, H5N1, H1N1 and Ebola were principally restricted to Asia and Africa. These outbreaks did create unique uncertainties, as well as experiential learning for organizations operating in these regions. However, the extent to which MNEs gained valuable experience or insights from past viral infectious diseases is underexplored in international business literature and needs further examination (Earl and Rose, 2022). The effects of exogenous shocks on MNEs and associated uncertainties created by the pandemic demand more attention from researchers.

Further, the 2020 global healthcare crisis has introduced novel challenges and uncertainties that MNEs probably never anticipated, at least, not in terms of simultaneous global disruption to business operations, perpetual concerns for employees and stakeholders' well-being and safety, and a near-total, if not wholly total, disruptive effect on the entire global supply chain (Earl and Rose, 2022). It is thus germane to understand the numerous unanticipated uncertainties that MNEs were exposed to as a result of the global healthcare crisis. Hence, the first research question (RQ):

RQ1. What unanticipated uncertainties did MNEs have to deal with in light of the unprecedented global pandemic (COVID-19)?

2.4 Dynamic capabilities and uncertainties created by COVID-19

DCs could help organizations manage uncertainties better (Dagnino *et al.*, 2021; Zahra *et al.*, 2022). In their literature review, Dagnino *et al.* (2021) found that DCs at the firm level could be used to manage uncertainties, especially if the uncertainties are market and technological uncertainties. However, the unanticipated uncertainties associated with COVID-19 appear beyond just market and technological uncertainties. According to Ciravegna and Michailova (2022, p. 180), "the world economy will become more uncertain in the future and will see more disruptions." One reason is that the global economy has become more integrated, permitting more shock transmission (Teece *et al.*, 2016). Thus, in the wake of an exogenous shock such as the globally disruptive pandemic, it became imperative to know if MNEs could use DCs to manage numerous consequential uncertainties.

Studies have examined how organizations responded to exogenous shocks by using DCs (Fainshmidt *et al.*, 2017; Wilhelm *et al.*, 2015). For example, Fainshmidt *et al.* (2017) argued that MNEs' performance during a crisis is linked with asset management capabilities developed before the crisis. Notwithstanding, not much is known about how MNEs respond to exogenous shocks or black swans, such as a disruptive global health-care crisis. There is still a lot to learn as it concerns the utilization of DCs by MNEs in response to uncertainties created by exogenous shocks such as pandemics. It is thus essential to examine how MNEs responded to unanticipated uncertainties of COVID-19 by using DCs, leading to the second set of RQs:

RQ2a. To what extent did MNEs use DCs in responding to unanticipated uncertainties created by COVID-19?

RQ2b. To what degree are such strategic responses to unanticipated uncertainties predicated on MNE's specific industry and headquarters location?

3. Methods

3.1 Research and study context

A narrow view of COVID-19 could result in incomplete or misleading conclusions. Therefore, more innovative and broader methodological perspectives are necessary to understand COVID-19 and its impact on organizations (Budhwar and Cumming, 2020). Further, researching crises, especially exogenous shocks like pandemics, presents difficulty, such as engaging in real-time with the sequence of events or even having access to data (Buchanan and Denyer, 2013). This study, therefore, responded to advocacies for innovative and unconventional methodologies when analyzing crises by "relying on non-traditional data sources" (Buchanan and Denyer, 2013, p. 216). We borrowed from the public relations domain on dialogic communication and sought real-time responses and actions from MNEs' websites.

Dialogic communication is concerned with organizations communicating, forming relationships, interacting with and engaging in dialogues with their stakeholders and the public through mediated platforms such as websites (Chen *et al.*, 2020; Wirtz and Zimbres, 2018). Websites' analysis and reporting, as well as other forms of computer-mediated communication, have been used to examine issues in corporate social responsibility (Kühn *et al.*, 2018), hotels and online reviews (Sheng *et al.*, 2019) and tourism and destinations (Hinson *et al.*, 2018). Furthermore, the websites of Fortune 500 MNEs have been analyzed for their dialogic communication (McCorkindale and Morgoch, 2013), as well as their ability to provide organizational information in international business (Oh *et al.*, 2020). Thus, corporate websites represent authentically genuine sources of information concerning organizational actions.

Given the research questions, a qualitative study was preferred to comprehend the phenomenon and reveal insights into specific responses of multinational organizations (Miles *et al.*, 2014). The emphasis is on MNEs for two main reasons. One, MNEs have business operations in multiple countries and possess the ability to understand the uncertainties being confronted (Li and Tallman, 2011). Two, MNEs tend to develop DCs and organizational agility because they operate in an increasingly changing environment (Teece *et al.*, 2016). In light of the above, it was decided that MNEs, as ranked by Fortune Magazine in its annual Fortune Global 500 listing, should be included in the study (Fortune, 2020).

3.2 Justification of research method

This study is interested in the strategic organizational actions of 500 MNEs across numerous industries in different geographical locations. It was therefore deemed appropriate to use dialogic communication. We acknowledge that other methods of gathering data, such as case studies or in-depth interviews with managers, could provide deep insights into the effect of COVID-19 on organizations (Amankwah-Amoah *et al.*, 2021; Gurkov and Shchetinin, 2022). However, our goal in this study was to have a real-time understanding of a complex phenomenon and how MNEs across multiple industries strategically responded to uncertainties created by COVID-19. Interviews may be appropriate where the focus is on understanding firm-specific organizational strategies (Gurkov and Shchetinin, 2022). However, real-time analysis of 500 MNEs provided a broad, holistic perspective of DCs used by numerous multinationals. This approach allowed us to make valid generalizations across multiple industries.

3.3 Sampling and data collection

All 500 MNEs listed by Fortune (2020) were included in the study. Data were collected from their respective corporate websites to capture uncertainties faced and their strategic responses. The MNEs were divided into two groups of 250 companies each. Two trained research assistants retrieved information from websites belonging to their respective groups within six months between March 25 and August 25, 2020. The procedure involved several steps. One, due to the multiplicity of websites by MNEs, the focus was on headquarters' websites rather than individual countries of operations. Two, we emphasized the websites' English versions to ensure uniformity. Three, it was to be documented if websites' displayed any information related to COVID-19. Also, sections of websites that could contain relevant information were checked. Such sections included "press releases," "news," "media," "latest company news" and "media information." Four, websites' internal search engines were used to get related information. Keywords used in the search process were "covid-19," "coronavirus," "pandemic" and "crisis." Eleven MNEs were excluded from the study because nine websites were inaccessible, while two websites were in Mandarin without English translations. The process yielded 491 and 408 documents for both groups, respectively. To ensure inter-rater agreement, one of the authors randomly selected 100 websites to compare documents retrieved from both groups. Although no significant difference was observed, 13 more documents were obtained. Thus, inter-rater reliability was deemed very high, while 912 documents were found usable for the study, having satisfied the set criteria. Table 1 is a summary of the collected data, as well as eventual documents used for analysis.

3.4 Data analysis

In the initial phase of the analysis, all 912 documents were uploaded to ATLAS software. The authors conducted a preliminary evaluation of documents through content analysis. It was observed that despite making up 43.4% of MNEs in the population, documents retrieved from Asia, Australia, and South America accounted for less than 23%. Additionally, almost all initial labels were from documents obtained from European and North American MNEs. Documents obtained from MNEs with origins from Asia, Australia and South America did not provide adequate labels for analysis. Thus, it was decided to exclude such MNEs (Table 1).

3.5 Coding criteria

3.5.1 Industry classification and headquarters location. First, the researchers categorized MNEs and all retrieved documents according to their respective industries and headquarters location, especially as homogeneity could not be presumed among all Fortune Global 500 corporations. Exogenous shocks could impact various industries differently (Fainshmidt *et al.*, 2017). Industries were therefore classified into ten with their corresponding coding labels in parenthesis: food and groceries departments (FGD); healthcare (HC); merchandise and retail (MR); internet services and technology (IST); financial services (FIN); hotels, restaurants and leisure (HRL); aviation and aerospace (AA); chemicals and energy (CE); manufacturing (MAN); and motor vehicles and parts (MVP).

Second, based on documents in the final phase of analysis, MNEs were also classified according to the headquarters location. The locations were grouped and labelled as: Canada

	Initial phase (Analysis)					Final phase (Analysis)	
Continent	No. of countries per continent	MNEs in the population	Percentage of MNEs (%)	No. of documents retrieved	Percentage of documents retrieved (%)	No. of documents retrieved	Percentage of documents retrieved (%)
Asia	11	202	40.40	178	19.52	–	–
Australia	1	7	1.40	13	1.42	–	–
Europe	18	132	26.40	351	38.49	351	49.86
North America	3	140	28.00	353	38.71	353	50.14
South America	1	8	1.60	17	1.86	–	–
Excluded		11	2.20	–	–	–	–
Total	34	500	100	912	100	704	100

Table 1. Summary of the collected data

(CAN), European Union (EU), the UK and the USA. This classification allowed analytic examination in clusters.

3.5.2 Coding framework for uncertainties and dynamic capabilities used by multinational enterprises (Figure 2). The researchers agreed upon a coding framework (Table 2) and used it in the iterative process to build open codes directly from the retrieved data. The process was based on many coding criteria. One, each page of the retrieved documents was simplified into sentences and paragraphs. Two, the contents of every sentence were meticulously analyzed to determine specific organizational measures and actions undertaken in response to the pandemic. In line with the DC literature (Teece, 2007, 2020; Warner and Wäger, 2019), such measures should be related to sensing opportunities or threats (SO), seizing opportunities or neutralizing threats (SONT) and transforming internal processes and continuous renewal (TIP). Thus, each measure had a label of SO, SONT or TIP, or a combination of all the labels. For every sentence examined, coders also paid attention to underlying uncertainty implications. Some uncertainties were expressly stated within sentences, while others were impliedly assumed. Next, codes were ascribed to these uncertainties, represented by CU.

In many instances, some sentences generated multiple codes. For instance, the sentence from Amazon (2020), "we have made over 150 significant process changes in our operations network [. . .] to help teams stay healthy. Expect to invest approximately $4 billion. . .and have since hired 175,000 people in response to increased customer demand and to assist existing employees" had the following codes: Industry (IST1), Headquarters location (US1), employee safety (CU1), customer demand (CU2 and SO1), invest $4 billion (SONT1) and 150 process changes (TIF1).

Finally, the coding results were harmonized after comprehensively examining all documents. The cross-comparison yielded high intercoder reliability of 0.83. As a coding framework was used from the beginning, areas of difference were minor and limited. The researchers discussed the differences and agreed on positions to adopt.

3.6 Analysis in respect of the research questions

To answer *RQ1*, all codes related to uncertainties (Figure 1) (CU1 to CU_n) were retrieved. Then, the generated codes were systematically explored and analyzed while organizing them into meaningful nodes. This step was repeated to ensure distinct categories without overlapping labels. This procedure resulted in first-order codes grouped into second-order categories and finally pooled into aggregate themes. Without further alternative explanations, the systematic analysis of the relationship between emergent themes and consideration of extant literature supported the development of six cohesive dimensions (Miles *et al.*, 2014).

In respect of *RQ2a*, codes related to the strategic responses of organizations were retrieved, i.e. sensing opportunities/threats (SO1-SO_n), seizing opportunities/neutralizing threats (SONT1-$SONT_n$), and transforming internal process (TIP1-TIP_n). A strategic response from an organization was deemed complete if it had all three integral components. All three attributes enable firms to maintain evolutionary fitness and resilience concerning the external business environment (Teece, 2014a, 2020; Zahra *et al.*, 2022). Incomplete components or attributes without matches were not considered for further analysis. Some strategic responses of selected MNEs in response to the identified uncertainties are presented in Table 3. To answer *RQ2b*, codes based on MNEs' industries and headquarter locations were recalled and analyzed. First, we examined the responses based on the ten industries. Subsequently, the codes were assessed by the four headquarter locations. Further discussions are provided in the next section.

S/No.	Industries (Categorized as 10)	Headquarters location (4)	Covid-19 uncertainties (CUn)	Dynamic capabilities (Coding Scheme)*/Strategic Response (SRn) Sensing opportunities/threats (SOn)	Seizing opportunities/ neutralizing threats (SONTn)	Transforming internal processes and continuous renewal (TIPn)
1.	Food and groceries departments (FGD_n)	Canada (CAN_n)	- Uncertainty is being without perfect information, state of being unsure or lack of clarity about a situation. Coders examined sentences for underlying uncertainty implications. Some uncertainties were expressly stated within sentences while others were impliedly assumed. Examples: Disruption, Fear, Doubt, Unsure, Shutdown, Unpredictable, Concerns, Cancellation, Risk/Risky, Caution, Apprehension, Anxiety, Worry, Volatility, Suspension, Worsening cases	- Ability of organizations to understand, identify and assess opportunities and threats. Coders examined sentences for action words that described the above. Examples: Recognize, Observe, Notice, Monitor, Awareness, Concerns and anxieties about threats.	- Capacity of organizations to commit resources toward identified opportunities or threats. Coders assessed sentences for organizational capacity to mobilize resources to take advantage of opportunities or neutralize threats. Examples: Deploy, invest and commit resources (financial, human, technological). Others: Design processes, Rapid decisions, Immediate actions, Flexibility of decision-making process	- Capacity of organizations to capture value, improve performance and/or remain resilient through implementation of new processes and routines. Coders examined sentences for organizational actions involving swift implementation of processes and procedures. Examples: Alter existing business models, adopt and implement new business processes, align/realign organizational structure and internal processes with environment/external change, perform operations more efficiently, renew and improve operating routines, quick change to previous course of action.
2.	Health care (HCn)	European Union (EUn)				
3.	Merchandise and retail (MRn)	United Kingdom (UKn)				
4.	Internet services and technology (ISTn)	United States (USn)				
5.	Financial services (FINn)					
6.	Hotels, restaurants and leisure (HRLn)					
7.	Aviation and aerospace (AAn)					
8.	Chemicals and energy (CEn)					
9.	Manufacturing (MANn)					
10.	Motor vehicles and parts (MVPn)					

Notes: * =The coding scheme for dynamic capabilities is from literature based on meaning, definitions and features of dynamic capabilities (Schoemaker *et al.*, 2018; Teece, 2007, 2020; Teece *et al.*, 1997; Warner and Wäger, 2019); where n = nth term of the variable of interest; Strategic response should involve all three elements of dynamic capabilities

Table 2. Summary of the coding framework used in this study

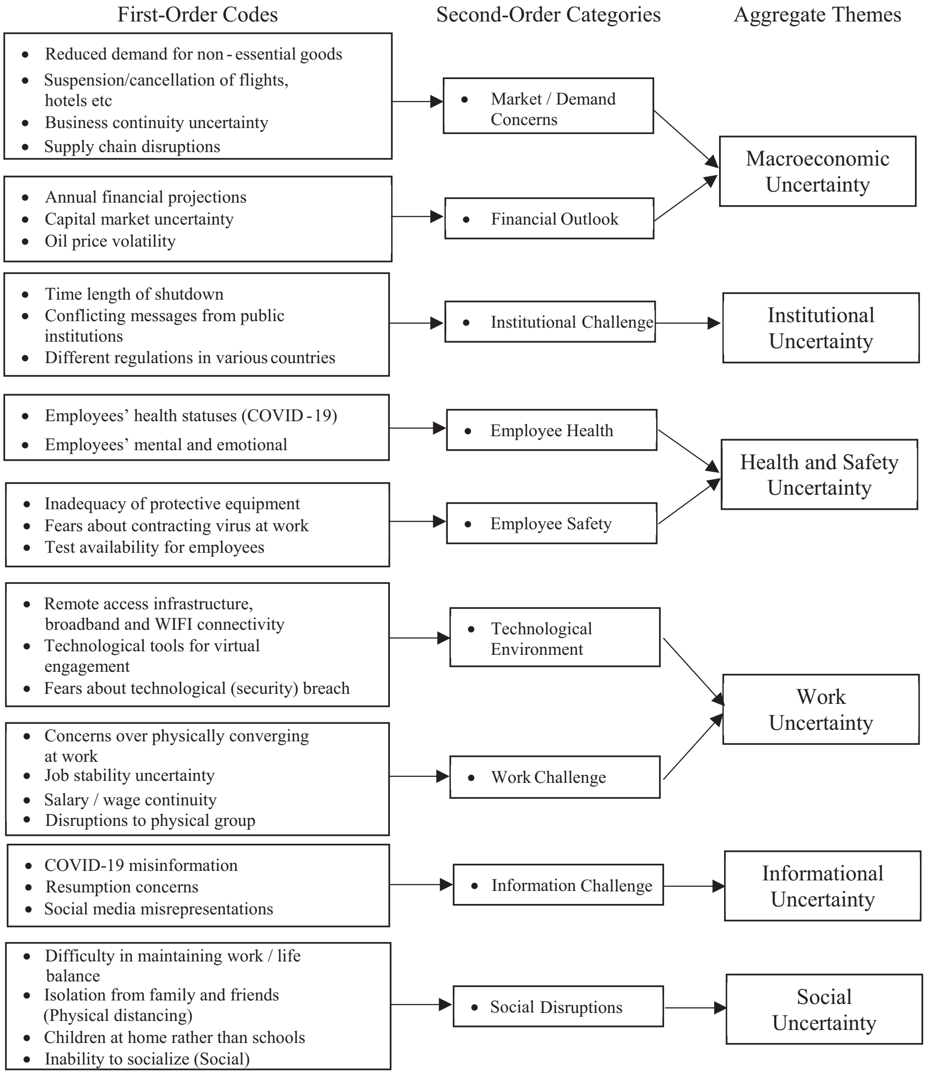

Figure 1.
Coding structure on uncertainties

4. Findings and discussions

4.1 Unanticipated uncertainties

As a consequence of COVID-19 and in line with *RQ1*, this study identified six unanticipated uncertainties that MNEs confronted during the crisis. They are macroeconomic, institutional, health and safety, work, social and informational uncertainty. Illustratively, as organizations, Amazon faced macroeconomic uncertainties related to disruptions to its supply chain and reduced demand for nonessential products; Nestlé encountered institutional uncertainties involving different regulations in various countries due to restrictive lockdown rules; Novartis (2020) confronted health and safety uncertainties concerning mental and emotional state of employees, doubts about availability of protective equipment and worries about employees contracting the virus at work; Lafarge and Philip Morris experienced work uncertainties connected with heightened concerns among employees about job stability, working from home, employee engagement and team cohesion; Apple and Walmart came across informational uncertainties attributed to social media misrepresentations and efficacy of wearing masks or otherwise; while Tesco and Microsoft got challenged with social uncertainties pertaining to employees' anxieties about inability to socialize, isolation from family and children being at home rather than schools.

It is emphasized that during past exogenous shocks, MNEs experienced certain uncertainties. For example, it could be argued that past viral epidemics in Asia and Africa, such as SARS, MERS, H5N1, H1N1 and Ebola, would have presented multinationals with uncertainties related to social, health, safety and informational concerns. However, the authors are unaware of any previous studies that found such uniquely peculiar uncertainties associated with the effect of viral infectious diseases on the operations of MNEs. Additionally, it should be acknowledged that, unlike COVID-19, these infectious outbreaks were primarily regional (Asia and Africa) (Gates, 2020), and the impact appeared to have been experienced more by local subsidiaries and MNEs operating in those regions.

4.1.1 Macroeconomic uncertainty. The COVID-19 pandemic created numerous uncertainties related to economic activities. Travel disruptions to international business operations, reduced international mobility and uncertainties concerning employee furloughs at parent organizations and foreign subsidiaries are a few examples. Also, concerns about demand and market uncertainties came to the fore during the pandemic. There was an abrupt shift in consumer preferences and demand for goods and services. On the one hand, there was increased demand for household items such as food, toiletries and groceries; on the other hand, there was reduced demand for nonessential goods like automobiles and services like travel and tourism. This unpredictability in demand and market conditions created macroeconomic uncertainties related to planning, supply chains and stock orders for multinationals. Notably, the manufacturing and production facilities of MNEs in affected nations had to be shut down, with no certainty of resumption (Carracedo *et al.*, 2021). This created macroeconomic uncertainty reverberating around global financial markets and signified potential economic gloom for MNEs.

4.1.2 Institutional uncertainty. Foreign subsidiaries of MNEs are confronted with the dilemma of institutional duality – embeddedness within two different institutions (organizational institutions and host country institutions) – and how to continuously achieve legitimacy by balancing institutional pressures from external environments in the

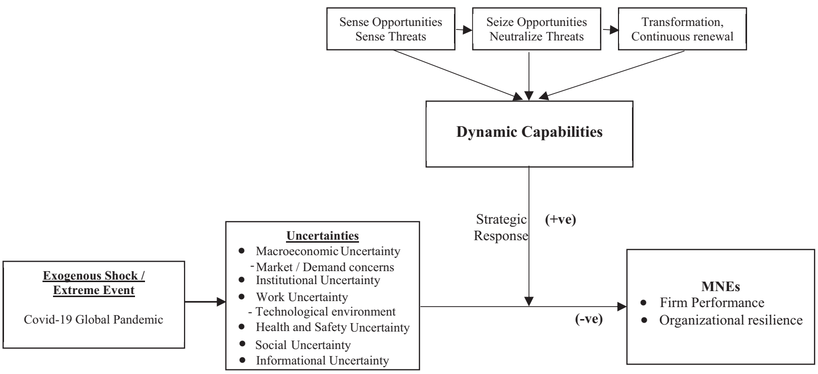

Figure 2.
Relationship between COVID-19 uncertainties and dynamic capabilities

Table 3. Strategic actions of selected MNEs in response to COVID-19 uncertainties by using dynamic capabilities

S/No.	Uncertainty type	Sensing opportunities (and threats)	Seizing opportunities (neutralizing threats)	Transforming internal process
1.	Macro-Economic uncertainty	• Observation of heightened demand for household products – DOLLAR GENERAL • Increased demand for essential products especially through online channels – AMAZON • Possibility of disruption to business activities and operations – LAFARGE • Probability of reduced financial earnings and income due to decreased demand – PBF ENERGY	• Instant mobilization of 50,000 new employees to support business operations – DOLLAR GENERAL • Mobilization of resources to meet increasing needs while deciding on redundant assets – AMAZON • Commitment of resources to continuity planning and proactive supply chain management – LAFARGE • Decision of company to maintain flexibility and preserve liquidity – PBF ENERGY	• Training, investment in and growth-path for some of the new employees – DOLLAR GENERAL • Restructuring through temporary closure of Amazon Books, 4-star, and Pop Up stores – AMAZON • Deployment of Resilience Teams using a 4-level alert Trigger Action Response Plan (TARP) – LAFARGE • Organizational policy of reducing capital expenditures by $240 million (35% reduction) – PBF ENERGY
2.	Institutional uncertainty	• Inability of health institutions to effectively trace contacts of positive cases – GOOGLE and APPLE • Concerns of supplies being unavailable at communities due to shutdowns – INTEL • Observed shortages of masks/protective equipment for frontline workers due to restrictions – GENERAL MOTORS • Recognition that every country encountered different needs due to lockdown rules – NESTLÉ	• Joint resource mobilization using Bluetooth technology to help health agencies – GOOGLE and APPLE • Decision by management to allocate resources to areas where the organization operates – INTEL • Investment of resources and conversion of office facilities to make masks and equipment – GENERAL MOTORS • Comprehensive analysis of country's specific needs through foreign subsidiary – NESTLÉ	• Launched a contact-tracing solution through application programming interfaces (APIs) – GOOGLE and APPLE • $6 million distribution in relief efforts in areas where firm is located – like Washington County, Oregon – INTEL • Donation of organizationally-produced masks and safety equipment to frontline workers – GENERAL MOTORS • Employment of different strategies in countries of operation to obtain local legitimacy – NESTLÉ

(continued)

S/No.	Uncertainty type	Sensing opportunities (and threats)	Seizing opportunities (neutralizing threats)	Transforming internal process
3.	Health and safety uncertainty	• Large number of employees (people) asking for rapid COVID-19 tests – ABBOTT • Worries and concerns about the mental and emotional state of employees – NOVARTIS • Employees in different branches tested positive for Coronavirus - INTESA SANPAOLO • Worries about employees and caregivers carrying the virus home to loved ones – HCA HEALTHCARE • Confirmed COVID-19 case of an employee at Dubuque, Iowa construction facility – DEERE	• Commitment of resources to the development of a solution that could offer rapid tests - ABBOTT • Investment of resources in technology that could help employees – NOVARTIS • Affected branches were immediately shut down to neutralize the threat – INTESA SANPAOLO • Commitment of funds to finding a plausible solution that works for all parties – HCA HEALTHCARE • Suspended production of its construction and forestry equipment factory – DEERE	• Development of a rapid molecular point-of-care 5-min solution tests for Covid-19 – ABBOTT • Employee app development that allowed workers to connect and engage in digital wellness – NOVARTIS • Strict daily hygiene measures and protocol in all branches across the world – INTESA SANPAOLO • After-shift housing provision for caregivers through alternative hotel accommodation – HCA HEALTHCARE • Policy to waive copays, coinsurance, and deductibles for COVID-19 testing for all employees – DEERE
4.	Work uncertainty	• The awareness that employees may not be able to physically converge at work – GROUPE BPCE • Concerns about employee engagement, group work and team cohesion – LAFARGE • Observation of heightened concerns about job stability among employees – PHILIP MORRIS • Acknowledgment that technology may be crucial to work functionality – MICRON TECHNOLOGY	• Mobilization of resources to enable employees continue to work remotely – GROUPE BPCE • Allocation of resources to development of alternatives if teams can not physically meet – LAFARGE • Decision of company to allay concerns and provide roadmap for all workers – PHILIP MORRIS • Investment in technological resources to aid and improve work functionality – MICRON TECH.	• Internal processes transformed in such a way to allow employees work from home – GROUPE BPCE • Designed support programs and global webinars for employee resilience and bonding – LAFARGE • Organizational policy not to terminate employment or reduce workers' compensation – PHILIP MORRIS • Deployment of technological tools throughout company to improve work functionality – MICRON TECH.
5.				

(continued)

Table 3.

S/No.	Uncertainty type	Sensing opportunities (and threats)	Seizing opportunities (neutralizing threats)	Transforming internal process
	Informational uncertainty	• Observation that there was misinformation among members of the public concerning Covid-19 virus – APPLE • Understanding that stakeholders especially customers needed constant information – BARCLAYS • Uncertainty about information and status of employees – TELEFÓNICA • Initial concerns about efficacy of wearing masks or otherwise – WALMART	• Decision to partner government/ health agencies (CDC) to provide solution to misinformation – APPLE • Put processes in place to design a solution to ensure continuous information dissemination – BARCLAYS • Organization is transparent and provides information about an employee who tested positive – TELEFÓNICA • CEO wears mask and records an experiential 4-min video to teach customers safe shopping – WALMART	• Developed Covid-19 app (available on App Store) to enable people get trusted information – APPLE • Deployed regularly updated webpages specially dedicated to Covid-19 on its website – BARCLAYS • Activation of information space in the Occupational Health section of employee Intranet – TELEFÓNICA • Mandatory policy for all employees and customers across the world to wear masks – WALMART
6.	Social uncertainty	• Understanding employees' difficulty with maintaining work and life balance – MICROSOFT • Recognition that employees may require additional support for their children – PRUDENTIAL FINANCIAL • Possibility that some parents may need to be with their children due to school closures – TESCO • Realization that employees and their children will need to be socially engaged and connected – NORVATIS	• Designed processes to ensure employees balance their family responsibilities with work – MICROSOFT • Decision to improve work conditions by providing additional support for families – PRUDENTIAL FIN. • Resolution to support parents and find means of ensuring they can be with their kids – TESCO • Collaboration with edu-platforms such as Coursera and resource investment in digital learning – NORVATIS	• Supported and integrated nontraditional working hours for all employees – MICROSOFT • Policy to reimburse employees who took caregiving support from neighbors or relatives – PRUDENTIAL FIN. • Company course of action to support parents through a new school closure leave policy – TESCO • Licenses to employee's household to support online family learning and homeschooling needs – NORVATIS

Table 3.

host country, as well as the parent organizations (Beddewela, 2019). As the virus became widespread, governments worldwide enacted laws and regulations such as border closures, shutting airspaces, enacting travel restrictions, and imposing partial or complete city shutdowns (Carracedo *et al.*, 2021). These state actions acted as additional coercive institutional pressures for conformity by MNEs and their foreign subsidiaries (Beddewela and Fairbrass, 2016; DiMaggio and Powell, 1983). Differences and variances in locally enacted regulations from one country to another, as well as expected days or months of shutdown period, became a source of additional institutional uncertainty, especially for the parent organization. The potential disconnect between rules across different national boundaries became a source of institutional uncertainty for MNEs.

4.1.3 Health and safety uncertainty. Viral epidemics in the recent past were primarily regional in their scale and effect (Amankwah-Amoah, 2016). However, COVID-19 is reportedly the deadliest virus in recent history regarding casualty numbers and global effects on international business (Gates, 2020). Thus, it presented uncertainties related to the health and safety of stakeholders in ways that had not been previously captured in the literature. One of the major concerns for multinationals was the health status of their employees and associates, not just at the parent organization but at various foreign subsidiaries in multiple countries and continents. More than before, employees' physical, mental and emotional state and well-being suddenly became the number one priority for organizations. The uncertainty of spreading the disease within the work environment presented real issues for organizations.

4.1.4 Work uncertainty. Due to institutional pressures such as regulations on city shutdowns, and physical and social distancing in many countries (Earl and Rose, 2022), uncertainties began to emerge for MNEs related to work arrangements. Extreme events in the past, like GFC '08, only created concerns about job insecurity and losses. However, with COVID-19, it became difficult, if not impossible, for employees to physically converge at their work-stations and even in places where they could; the level of uncertainty and fear concerning social interactions with other people at work became a dilemma. Furthermore, organizations were uncertain about things they previously took for granted about employee engagement, team bonding, staff brainstorming, within and between group meetings, informal discussions, employee emotional support by human resources, job stability, job satisfaction and employee performance. In ways previously unimaginable with crises and disasters, COVID-19 presented MNEs with uncertainties they could not have proactively anticipated. Additionally, there were technological concerns related to employees' virtual engagement and transferring work from the office to the home environment.

4.1.5 Informational uncertainty. Since 1918, only five viral outbreaks, COVID-19 inclusive, have been declared pandemics by the World Health Organization (WHO). The Spanish flu (1918–1919) was the most severe and happened more than a century ago. Other milder pandemics, such as the Asian flu (1957–1958) and Hong Kong flu (1968), occurred more than fifty years ago and were quite regional in effect (WHO, 2020). Thus, when coronavirus became a global problem, information concerning what to do became a challenge. Unlike past exogenous shocks, which had presented MNEs with experiential learning, there was little or no experience with pandemics. The absence of a ready-made template for organizations in dealing with global diseases became an avenue for uncertainties concerning information dissemination to stakeholders. At the outset, it was dismissed and compared to the seasonal flu. Also, it appeared there were uncertainties about the spread, symptoms, potential carriers, efficacy of certain drugs, ingestion of disinfectants, summer effect on disease, quarantines and even mask-wearing. All these resulted in numerous information voids for MNEs, which in many instances, further increased the communication gap with stakeholders.

4.1.6 Social uncertainty. Human beings are not designed to be isolated from one another (Calabrò *et al.*, 2022). One significant effect of city shutdowns and physical distancing is that it created a social disconnection between members of staff of organizations and their extended families and loved ones (Caligiuri *et al.*, 2020). Suddenly, being with those who helped maintain a stable balance between work, family and life posed risks. Employees' parents and grandparents were medically considered a vulnerable group. Employees' kids could neither see their grandparents nor be around them. Friends became isolated. Associates could not band together to watch their favorite teams or sports on television, while drinks with friends in bars could no longer be enjoyed. Being home all day long with kids who should be in school and a spouse who would typically be away at work created unanticipated social uncertainties, which could have potentially increased other vices such as drinking and abuse.

4.2 Multinational enterprises' strategic response through dynamic capabilities

Based on *RQ2a*, we found evidence to support the extensive use of capabilities by MNEs in a flexible, renewed and regenerative manner to ensure business continuity and organizational firm performance. Furthermore, each identified uncertainty dimension connected with COVID-19 appeared to be demonstrably confronted with DCs used by MNEs. As suggested by scholars (Petricevic and Teece, 2019; Teece, 2007, 2020), these capabilities involve the ability to sense opportunities and threats, seize opportunities and neutralize threats and transform internal processes.

4.2.1 Sensing opportunities and threats. Even amid a crisis, MNEs' ability to identify and assess opportunities and threats globally is a unique asset that leads to its strategic renewal (Teece, 2014b; Warner and Wäger, 2019). In response to disruptions, uncertainties, and changing business environment occasioned by COVID-19, it was observed that MNEs had to quickly respond by continuously recognizing opportunities and threats in relationship with stakeholders' needs. For instance, Amazon regularly experiences a predictable increase in requests during holiday periods; however, with minimal warning, the simultaneous shutdown in US states occurred, which propelled massive demand for essential products (Amazon, 2020). The organization sensed a rapid change in the external business environment and had to respond quickly. The heightened demand presented an opportunity for Amazon, yet the additional pressure it created for its suppliers and delivery network presented real threats. The organization sensed opportunity and threat at the same time. It had to find a way to seize the opportunity while neutralizing the threat simultaneously with the utmost consideration for customers' needs and a changing business environment.

The example of Amazon emphasizes macroeconomic uncertainty due to exogenous shock, especially as it relates to potential loss of revenue, complete shift or movement along the demand curve, excess demand over supply, the possibility of a price increase and loss of legitimacy in the operating environment. When confronted with these uncertainties, the organization could sense change by identifying, developing, assessing and calibrating opportunities and threats concerning customer needs (Teece, 2007). In seizing the opportunity, Amazon quickly invested resources into the additional recruitment of 100,000 associates across their fulfilment and delivery networks and another 75,000 people to respond to customer demands.

4.2.2 Seizing opportunities and neutralizing threats. Can MNEs quickly respond to significant environmental changes and seize opportunities or neutralize threats they have identified (sensed)? Evidence abounds of organizations mobilizing and committing resources to rapidly take advantage of recognized opportunities or neutralizing threats in such a manner that value is captured from the process while internal organizational processes are transformed. For example, General Motors, an American multinational vehicle manufacturer, observed shortages of masks and protective equipment for frontline workers due to travel restrictions. The organization responded to the opportunity by investing resources and converting its Warren, Michigan, facility to making masks and personal protective equipment. These items were subsequently distributed to those in need of it, including its employees (General Motors, 2020). The experience and knowledge garnered could alter its operational routines and make the company a future producer of masks and hospital equipment.

However, not all cases of exogenous shocks present avenues of opportunities. Sometimes, the challenge may be to identify threats and neutralize them as Deere and Company did when it transparently acknowledged and confirmed that one of its employees had tested positive for COVID-19 at a construction facility (Deere, 2020). Realizing the impending threat, uncertainty, and anxiety generated among other staff members, Deere responded quickly by suspending production at its Iowa construction and forestry equipment factory. The facility subsequently underwent additional safety measures, and employees were allowed to either work remotely or physically return via staggered schedules. Finally, the firm developed organizational policies to waive copays, coinsurance and deductibles for COVID-19 testing for all its employees (Deere, 2020).

4.2.3 Transforming internal process. After MNEs sense and seize opportunities or neutralize threats, the natural progression will be to design and develop organizational operating routines and align internal processes with external change. This study identified examples of this vital component of DCs. Abbott, an American healthcare MNE, observed pressure on frontline workers from patients who needed diagnosis. The company sensed an opportunity with diagnosis and concluded that fast diagnostic results after tests could help treat COVID-19 patients and society in general. It seized the opportunity by investing resources into the development of molecular testing technology, which helps detect the presence of an infection or a virus. This investment resulted in a transformation that included a molecular point-of-care test to detect the virus quickly. The tests were designed to identify the COVID-19 virus by targeting small amounts of it and amplifying that portion until there is enough for detection. A procedure usually took hours and sometimes days, significantly transforming access to rapid tests by delivering rapid results in as little as 5 min and negative results in 13 min (Abbott, 2020).

The Abbott example is an instance of transforming internal processes through asset orchestration. At the base level, asset orchestration involves identifying critical assets (resources) necessary for seizing an opportunity or neutralizing a threat and investing in them. The investment realigns organizational structure with the external competitive environment. The other part of asset orchestration, which is quite significant, concerns management skills to coordinate, configure, integrate and deploy co-specialized assets, including technologies, in a productive way (Teece, 2020).

4.3 Strategic responses according to multinational enterprises' specific industry and headquarters location

Regarding *RQ2b*, we found no evidence to support the proposition that the strategic responses of MNEs to unanticipated uncertainties were predicated on their respective industries or headquarters location. To reach this verdict, we analyzed ten industries based on criteria such as the degree of essentiality during the pandemic (demand), the impact of the lockdown on the business model, and the impact of the home office on the business model (Table 4).

Table 4. Industry classification of MNEs, COVID-19 effect and selected strategic responses of MNEs showing their dynamic capabilities

S/No.	Industry/Examples of Fortune 500 MNEs	Pandemic essentiality degree (demand)	Impact of lockdown on business model	Impact of home office on business model	Illustrative instances of MNEs' strategic responses across various industries
1.	*Food and Groceries departments* e.g. Kroger, Tesco, Woolworths	Essential (increased demand)	Very severe impact (online and mobile platforms as alternatives)	Slight difference/ slight change to business model (some personnel needed for packaging, logistics and essential deliveries)	- KROGER borrowed $1 billion through a revolving credit facility based on the macroeconomic uncertainties associated with the pandemic - To eliminate social uncertainties caused by Covid-19, TESCO developed a course of action to support parents through a new school closure leave policy
2.	*Health care* e.g. CVS Health, Walgreens, Cigna	Essential (increased demand)	Very severe impact (online and mobile platforms as alternatives)	Slight difference/ change to business model (Some personnel needed for packaging, logistics and essential deliveries)	- ABBOTT developed a rapid molecular point-of-care 5-minsolution tests for Covid-19 in response to health and safety uncertainties - In light of macroeconomic uncertainties caused by the pandemic, PFIZER offered US$4 billion through corporate bond sales
3.	*Merchandise/Retail* e.g. Walmart, Costco, Target, Home Depot, Macys	Essential (increased demand)	Very severe impact (online and mobile platforms as alternatives)	Slight difference/ change to business model (some personnel needed for packaging, logistics and essential deliveries)	- In respect of macroeconomic uncertainties influenced by the pandemic, CARREFOUR froze fixed salaries of executive members and reduced directors' fees by 25% - In response to informational uncertainties, WALMART mandated employees/customers across the world to wear masks after CEO records an experiential 4-min video to teach safe shopping

(*continued*)

S/No.	Industry/Examples of Fortune 500 MNEs	Pandemic essentiality degree (demand)	Impact of lockdown on business model	Impact of home office on business model	Illustrative instances of MNEs' strategic responses across various industries
4.	*Internet Services/Technology* e.g. AT&T, Facebook, Comcast	Essential (increased demand)	Mild/Minor impact (online and mobile platforms as alternatives)	Great difference/no significant change to business model (operations and business activities good for home office)	- AMAZON closed nonessential stores to reduce operating expenses while COMCAST raised $4bn through corporate bond sales, in response to macroeconomic uncertainties - To reduce social uncertainties caused by the pandemic, MICROSOFT supported and integrated nontraditional working hours for all employees
5.	*Financial Services* e.g. Citigroup, BNP Paribas, JP Morgan Chase, AXA, Metlife	Moderately essential (slightly reduced demand)	Mild/minor impact (online and mobile platforms as alternatives)	Great difference/ slight change to business model (transactions and financial activities through other platforms)	- INTESA SANPAOLO postponed 2019 dividend distribution in light of macroeconomic uncertainties associated with the pandemic - Based on the pandemic's informational uncertainties, ROYAL BANK OF CANADA developed specially-dedicated webpages to Covid-19 to keep stakeholders adequately informed and engaged
6.	Hotels, Restaurants and Leisure e.g. Starbucks	Nonessential (greatly reduced demand)	Very severe impact (limited alternatives)	No difference/slight change to business model (physical business operations and activities halted)	- STARBUCKS drew $500 million term-loan facility and issued $3 billion bonds in response to macroeconomic uncertainties - To reduce uncertainties associated with health and safety of employees, STARBUCKS expanded convenience-led formats such as drive-thru and curbside pickup

(*continued*)

Table 4.

Table 4.

S/No.	Industry/Examples of Fortune 500 MNEs	Pandemic essentiality degree (demand)	Impact of lockdown on business model	Impact of home office on business model	Illustrative instances of MNEs' strategic responses across various industries
7.	*Aviation and Aerospace* e.g. Delta, United, Lufthansa	Nonessential (greatly reduced demand)	Very severe impact (limited alternatives)	No difference/could not alter business model (business operations and travels halted)	- In response to macroeconomic uncertainties, AIR FRANCE-KLM drew down a €1.1bn credit facility while DELTA reduced operating expenses by temporarily consolidated clubs and lounges - In light of informational uncertainties provoked by Covid-19, AMERICAN AIRLINES postponed launch of new routes and offered date change flexibility and fee waivers to all customers
8.	*Chemicals and Energy* e.g. Chevron, BP, ExxonMobil, Total	Nonessential (greatly reduced demand)	Severe/major impact (limited alternatives)	No difference/could not alter business model (operations and production activities halted at sites)	- PBF ENERGY reduced capital expenditures by \$240m representing 35% reduction as a consequence of the macroeconomic uncertainties caused by Covid-19 - To reduce employees' apprehension and work uncertainties, ENEL group underwrote Covid-19 insurance policies for all it 68,000 employees in case of hospitalization with the virus
9.	*Manufacturing* e.g. Caterpillar, Intel	Nonessential (greatly reduced demand)	Severe/major impact (limited alternatives)	No difference/could not alter business model (operations and production activities halted)	- ADIDAS halted share repurchase for Y2020 in response to macroeconomic uncertainties - MICRON TECH deployed technological tools throughout company to improve work functionality in response to work uncertainties

(*continued*)

S/No.	Industry/Examples of Fortune 500 MNEs	Pandemic essentiality degree (demand)	Impact of lockdown on business model	Impact of home office on business model	Illustrative instances of MNEs' strategic responses across various industries
10.	*Motor Vehicles and Parts* e.g. Volkswagen, Ford, BMW, Volvo, Bosch	Nonessential (greatly reduced demand)	Severe/major impact (limited alternatives)	No difference/could not alter business model (operations and production activities halted at sites)	- GENERAL MOTORS diversified its operations to produce face masks in response to institutional uncertainties concerning shortages of masks/ protective equipment for frontline workers - In response to macroeconomic uncertainties, MICHELIN decreased Y2019 proposed dividend amount. Also, executive remuneration was reduced by 25%

Table 4.

Irrespective of the difference in industries concerning essentiality and business models, we found that all six unanticipated uncertainties were typical across every industry. MNEs strategically responded to these concerns to mitigate their effect on business continuity. In Particular, macroeconomic and institutional uncertainties received a lot of attention and response from MNEs. For example, the time length of restrictive lockdowns and regulations in different countries (institutional concerns) presented multinational organizations with administrative dilemmas. However, perhaps one uncertainty that posed the most significant challenge to all MNEs, notwithstanding industry type, was macroeconomic unpredictability related to financial projections and market/demand concerns. From one industry to another, the strategic responses of MNEs to macroeconomic uncertainties were decisively swift and revealed their capabilities to be dynamic with the transformation of internal processes.

One significant modification to internal processes common to all industries was adjustments to operating expenses, especially with unpredictability about the end of the pandemic and rising organizational anxieties about financial liquidity. Some cost-reducing measures included consolidating operations, reducing executive compensation and changing dividend payout. For example, Carrefour (retail industry) froze fixed salaries of executive members and reduced directors' fees by 25%, Delta (aviation industry) reduced operating expenses by temporarily consolidating clubs and lounges, and Michelin (motor vehicles industry) decreased the 2019 proposed dividend amount and reduced executive remuneration by 25%. Such illustrations of reducing costs are typical across all industries. Also, one instrument used by MNEs to protect their financial portfolios against the macroeconomic uncertainties of the pandemic was by raising additional funds through credit facilities or corporate bonds. This strategy was common across industries too.

Additionally, MNEs had to respond strategically to employees' apprehension and anxiety related to work, social, health and safety, and informational uncertainties. This approach was the case in every industry analyzed. For instance, every MNE had to respond to associates' concerns regardless of industry. Fears about contracting the virus at work and their mental/emotional statuses (health and safety concerns), worries about salaries and job losses (work insecurities), apprehensions about isolation from family and inability to socialize (social dilemma) and anxieties about the physical resumption of activities and social media misrepresentations (informational concerns). We found evidence across all industries to suggest organizations gave utmost consideration to these issues and had to provide strategic responses to employees' insecurities.

Furthermore, we did not find any analytical evidence to show that headquarters location influenced MNEs' strategic response to these uncertainties in one way or another. We advance some reasons for the insignificant effect of headquarters location on DCs used by MNEs. One, viral epidemics in the recent past were primarily restricted to regions (Gates, 2020); however, due to its virulence, COVID-19 had a more contagious worldwide effect (Migdadi, 2022). Two, by the time it was declared a pandemic by WHO in March 2020, the virus had spread globally, and there was rapid community transmission in almost all countries (Carracedo *et al.*, 2021). Three, the same nonpharmaceutical interventions, such as social distancing, restrictive lockdowns and airspaces shutdown, were used in affected countries to stop the viral spread (Earl and Rose, 2022). Hence, these unprecedented factors affected MNEs' headquarters location almost equally as they affected subsidiary locations. Strategic responses to uncertainties, therefore, took a global, holistic dimension rather than a locational or regional approach. Additionally, we re-examined MNEs headquarters location *vis-à-vis* their country-of-origin and did not observe any significant difference. Thus, in view of reasons advanced above, we posit that headquarters location and country-of-origin did not significantly influence MNEs' strategic response.

5. Conclusion

The world economy will face more future uncertainties and disruptions to investment and trade (Ciravegna and Michailova, 2022). Therefore, extreme events that will alter lives and how business is conducted will always occur. However, no exogenous shock in recent history has had such monumental global disruption to the business operations of MNEs as COVID-19 (Gates, 2020). Suddenly, MNEs became vulnerable to previously unanticipated uncertainties. Moreover, organizations did not appear to have a pandemic-response template to follow because recent past pandemics and epidemics were primarily regional with little effect on international business. Thus, for the first time, MNEs were arguably confronted with concerns they had never previously envisioned.

In this regard, this study sought to comprehend the uncertainties MNEs had to confront in light of COVID-19 and how they responded to it. As a result, the study makes some contributions. One, it identified six unusual uncertainties and challenges MNEs could face due to a global pandemic. Two, this study found evidence to support the suggestion that MNEs could remain resilient by using DCs in response to uncertainties amidst an exogenous shock. Thus, it makes a theoretical contribution concerning DCs and extends what was previously known about DCs, uncertainties and exogenous shocks. Further, strategic responses of MNEs to unanticipated uncertainties did not depend on their respective industry type or headquarters location. Three, it makes a methodological contribution to strategic management and international business literature and offers a nontraditional source of data collection.

5.1 Theoretical implications

This study extends the concept of MNEs' organizational learning to exogenous shocks caused by viral biological diseases. Previous exogenous shocks have provided organizational learning for MNEs regarding their preparedness for similar future incidents (Li and Tallman, 2011; Oh *et al.*, 2020). For instance, the oil shocks of the 1970s, the global financial crisis of 2008, the 9/11 terrorist attacks, and viral epidemics such as SARS, MERS, avian influenza/bird flu, swine flu and Ebola are examples of shocks that provided experiential learning. However, compared with previous exogenous shocks, COVID-19 has had a more profound, immeasurable, and globally disruptive impact on MNEs (Caligiuri *et al.*, 2020). Moreover, the unprecedented magnitude of the pandemic, concerning its contagion, rapid sprea and high mortality rate, imposed several challenges on MNEs. We advance that although the nature of the exogenous shock may be an unprecedented global health-care crisis, MNEs do learn from past experiences to guide decision-making and remain competitive.

Further, this study contributes to the literature on DCs and extends the use of DCs during extreme events. DCs could help organizations manage uncertainties better (Dagnino *et al.*, 2021; Zahra *et al.*, 2022), and there is evidence to show that organizations could remain competitive during and after exogenous shocks by using DCs (Fainshmidt *et al.*, 2017; Wilhelm *et al.*, 2015). Still, the disruptive effect of the pandemic presented new challenges for organizational resilience. This study presented evidence that even in the face of the worst health-care crisis in a century (Gates, 2020), MNEs can sense opportunities or threats, seize such opportunities or neutralize the threats while transforming their internal processes through continuous renewal. Lastly, the study builds on the literature on uncertainties and provides theoretical implications for at least six uncertainties MNEs are likely to encounter when the next exogenous shock inevitably occurs.

5.2 Managerial implications

MNEs have managed to cope with uncertainties associated with previous viral infectious diseases; however, the spread and impact of these past epidemics have been limited mainly to the continents of Asia and parts of Africa. Therefore, experiential learning consequent upon previous viral infectious diseases would have occurred more for local subsidiaries of MNEs operating in those regions. Comparatively and unlike epidemics in the recent past, COVID-19 has had an immeasurably impact. Dealing with and coping with the uncertainties created by the pandemic presented MNE managers with valuable experience in handling future global viral diseases when they inevitably occur. Based on the outcome of this study, the knowledge and experience acquired by managers in responding to uncertainties created by the pandemic traverses industry-type and is not subject to headquarters location. Thus, managers dealing with future pandemics can transfer knowledge from one industry or location to another.

As epidemics and pandemics, as well as other exogenous shocks, could occur more frequently than previously assumed (Van Tulder *et al.*, 2022) and as the world economy faces inevitable future uncertainties and disruptions (Ciravegna and Michailova, 2022); organizations must be in a position to constantly develop, renew, reconfigure and deploy internal and external strategic competencies to stay ahead of the competition. Managers should also be able to monitor the external environment, identify changes and assess opportunities *vis-à-vis* customer needs. They should be able to perceive threats as well. Further, managers should always be able to mobilize and commit resources to identify opportunities to capture value for the organization. It is not enough for managers to sense opportunities or threats; they must be able to react quickly by seizing such opportunities or neutralizing the threats. In addition, managers must be in a continuous renewal mode and be able to realign the internal structures and processes of the organization with a rapidly changing external environment. In other words, managerial cognition that will help build dynamic organizational capabilities is necessary. Amid adversities, changing environments, or future exogenous shocks, managers need to be able to sense opportunities or threats, seize such opportunities or neutralize threats while transforming their internal processes and structures to remain resilient.

5.3 Limitations and future research

This study has a few limitations that could serve as further research avenues. Website analysis could have specific challenges. There could be instances where organizational actions and responses regarding the pandemic may not have been deployed online. Also, the time-effect of dialogic communication does present a challenge, especially as organizations try to put the pandemic behind them. It is difficult to say if we would have the same conclusion searching through websites now. Although, by analyzing multiple websites, the method used allowed real-time examination of MNEs' immediate responses to the COVID-19 phenomenon; future studies could use in-depth interviews with managers across different industries. Interviews may also be particularly useful if the goal is to have in-depth understanding of firm-specific strategies used by organizations. Further, this study considered DCs generally; however, types of DCs such as adaptive, absorptive, knowledge creation, and innovative DCs have been discussed in the literature. The extent to which types of DCs could help organizations respond to uncertainties created by exogenous shocks could be quantitatively explored in the future. Additionally, MNEs' national cultures could have shaped their strategic responses to the pandemic. This presents broad opportunity for future studies.

References

Abbott (2020), "Detect COVID-19 in as little as 5 minutes", available at: www.abbott.com/corpnewsroom/diagnostics-testing/detect-covid-19-in-as-little-as-5-minutes.html

Amankwah-Amoah, J. (2016), "Ebola and global airline business: an integrated framework of companies' responses to adverse environmental shock", *Thunderbird International Business Review*, Vol. 58 No. 5, pp. 385-397.

Amankwah-Amoah, J., Khan, Z. and Osabutey, E. (2021), "COVID-19 and business renewal: lessons and insights from the global airline industry", *International Business Review*, Vol. 30 No. 3, p. 101802.

Amazon (2020), "2019 letter to shareholders", available at: https://blog.aboutamazon.com/company-news/2019-letter-to-shareholders

Beddewela, E. (2019), "Managing corporate community responsibility in multinational corporations: resolving institutional duality", *Long Range Planning*, Vol. 52 No. 6.

Beddewela, E. and Fairbrass, J. (2016), "Seeking legitimacy through CSR: institutional pressures and corporate responses of multinationals in Sri Lanka", *Journal of Business Ethics*, Vol. 136 No. 3, pp. 503-522.

Blanchard, O. and Gali, J. (2007), "The macroeconomic effects of oil shocks: why are the 2000s so different from the 1970s?", NBER Working Paper No. 13368.

Buchanan, D. and Denyer, D. (2013), "Researching tomorrow's crisis: methodological innovations and wider implications", *International Journal of Management Reviews*, Vol. 15 No. 2, pp. 205-224.

Budhwar, P. and Cumming, D. (2020), "New directions in management research and communication: lessons from the COVID-19 pandemic", *British Journal of Management*, Vol. 31 No. 3, pp. 441-443.

Calabrò, A., Chrisman, J. and Kano, L. (2022), "Family-owned multinational enterprises in the post-pandemic global economy", *Journal of International Business Studies*, Vol. 53 No. 5, pp. 1-16.

Caligiuri, P., De Cieri, H., Minbaeva, D., Verbeke, A. and Zimmermann, A. (2020), "International HRM insights for navigating the COVID-19 pandemic: implications for future research and practice", *Journal of International Business Studies*, Vol. 51 No. 5, pp. 697-713.

Carracedo, P., Puertas, R. and Marti, L. (2021), "Research lines on the impact of the COVID-19 pandemic on business. A text mining analysis", *Journal of Business Research*, Vol. 132, pp. 586-593.

Chau, V., Thomas, H., Clegg, S. and Leung, A. (2012), "Managing performance in global crisis", *British Journal of Management*, Vol. 23 No. S1, pp. 1-5.

Chen, Y., Hung-Baesecke, C. and Chen, X. (2020), "Moving forward the dialogic theory of public relations: concepts, methods and applications of organization-public dialogue", *Public Relations Review*, Vol. 46 No. 1, p. 101878.

Ciravegna, L. and Michailova, S. (2022), "Why the world economy needs, but will not get, more globalization in the post-COVID-19 decade", *Journal of International Business Studies*, Vol. 53 No. 1, pp. 172-186.

Dagnino, G., Picone, P. and Ferrigno, G. (2021), "Temporary competitive advantage: a state-of-the-art literature review and research directions", *International Journal of Management Reviews*, Vol. 23 No. 1, pp. 85-115.

Darendeli, I. and Hill, T. (2016), "Uncovering the complex relationships between political risk and MNE firm legitimacy: insights from Libya", *Journal of International Business Studies*, Vol. 47 No. 1, pp. 68-92.

Deere (2020), "Keeping our customers running", available at: www.deere.com/en/covid19/

DiMaggio, P. and Powell, W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48 No. 2, pp. 147-160.

Earl, A. and Rose, E. (2022), "International business in times of global disruption", *Review of International Business and Strategy*, Vol. 32 No. 1, pp. 1-9.

Fainshmidt, S., Nair, A. and Mallon, M. (2017), "MNE performance during a crisis: an evolutionary perspective on the role of dynamic managerial capabilities and industry context", *International Business Review*, Vol. 26 No. 6, pp. 1088-1099.

Fortune (2020), "Global 500", available at: https://fortune.com/global500/

Gates, B. (2020), "Responding to COVID-19: a once-in-a-century pandemic?", *New England Journal of Medicine*, Vol. 382 No. 18, pp. 1677-1679.

General Motors (2020), “An inside look at how general motors is mass-producing masks”, available at: www.gm.com/our-stories/commitment/face-masks-covid-production.html

Greenberg, J. (2014), “September 11, 2001: a CEO’s story”, *Harvard Business Review*, available at: https://hbr.org/2002/10/september-11-2001-a-ceos-story

Gurkov, I. and Shchetinin, I. (2022), “Grappling for strategic agility during the COVID-19 pandemic: the case of the Russian subsidiary of a large multinational IT company”, *Review of International Business and Strategy*, Vol. 32 No. 1, pp. 57-71.

Hinson, R., Osabutey, E. and Kosiba, J. (2018), “Exploring the dialogic communication potential of selected African destinations’ place websites”, *Journal of Business Research*, Vol. 116, pp. 690-698.

Ikenberry, G.J. (1986), “The irony of state strength: comparative responses to the oil shocks in the 1970s”, *International Organization*, Vol. 40 No. 1, pp. 105-137.

Jones, G. (2022), “Crises and international business”, in van Tulder, R., Verbeke, A., Piscitello, L. and Puck, J. (Eds), *Progress in International Business Research*, Vol. 16, Emerald Publishing, Bingley, pp. 27-32.

Kühn, A., Stiglbauer, M. and Fifka, M. (2018), “Contents and determinants of corporate social responsibility website reporting in Sub-Saharan Africa: a seven-country study”, *Business and Society*, Vol. 57 No. 3, pp. 437-480.

Li, S. and Tallman, S. (2011), “MNC strategies, exogenous shocks, and performance outcomes”, *Strategic Management Journal*, Vol. 32 No. 10, pp. 1119-1127.

McCorkindale, T. and Morgoch, M. (2013), “An analysis of the mobile readiness and dialogic principles on fortune 500 mobile websites”, *Public Relations Review*, Vol. 39 No. 3, pp. 193-197.

Migdadi, Y.K. (2022), “Airline effective operations strategy during COVID-19 pandemic: across regional worldwide survey”, *Review of International Business and Strategy*, Vol. 32 No. 1, pp. 10-38.

Miles, M.B., Huberman, A. and Saldaña, J. (2014), “*Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed., Sage, Thousand Oaks, CA.

Mithani, M.A., Gopalakrishnan, S. and Santoro, M.D. (2020), “Does exposure to a traumatic event make organizations resilient?”, *Long Range Planning*, Vol. 54 No. 3, p. 102031.

Novartis (2020), “Novartis announces further steps to protect and support its associates during the COVID-19 pandemic”, available at: www.novartis.com/news/novartis-announces-further-steps-protect-and-support-its-associates-during-covid-19-pandemic

Oh, C., Oetzel, J., Rivera, J. and Lien, D. (2020), “Natural disasters and MNC sub-national investments in China”, *Multinational Business Review*, Vol. 28 No. 2, pp. 245-274.

Pek, S., Oh, C. and Rivera, J. (2018), “MNC foreign investment and industrial disasters: the moderating role of technological, safety management, and philanthropic capabilities”, *Strategic Management Journal*, Vol. 39 No. 2, pp. 502-526.

Petricevic, O. and Teece, D. (2019), “The structural reshaping of globalization: implications for strategic sectors, profiting from innovation, and the multinational enterprise”, *Journal of International Business Studies*, Vol. 50 No. 9, pp. 1487-1512.

Schoemaker, P., Heaton, S. and Teece, D. (2018), “Innovation, dynamic capabilities, and leadership”, *California Management Review*, Vol. 61 No. 1, pp. 15-42.

Sheng, J., Amankwah-Amoah, J., Wang, X. and Khan, Z. (2019), “Managerial responses to online reviews: a text analytics approach”, *British Journal of Management*, Vol. 30 No. 2, pp. 315-327.

Tan, W. and Enderwick, P. (2006), “Managing threats in the global era: the impact and response to SARS”, *Thunderbird International Business Review*, Vol. 48 No. 4, pp. 515-536.

Teece, D. (2007), “Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance”, *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319-1350.

Teece, D. (2014a), “The foundations of enterprise performance: dynamic and ordinary capabilities in an (economic) theory of firms”, *Academy of Management Perspectives*, Vol. 28 No. 4, pp. 328-352.

Teece, D. (2014b), "A dynamic capabilities-based entrepreneurial theory of the multinational enterprise", *Journal of International Business Studies*, Vol. 45 No. 1, pp. 8-37.

Teece, D. (2018), "Business models and dynamic capabilities", *Long Range Planning*, Vol. 51 No. 1, pp. 40-49.

Teece, D. (2020), "Hand in glove: open innovation and the dynamic capabilities framework", *Strategic Management Review*, Vol. 1 No. 2, pp. 233-253.

Teece, D., Peteraf, M. and Leih, S. (2016), "Dynamic capabilities and organizational agility: risk, uncertainty, and strategy in the innovation economy", *California Management Review*, Vol. 58 No. 4, pp. 13-35.

Teece, D., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.

USA Today (2013), "Timeline: key events in financial crisis", *USA Today*, available at: www.usatoday.com/story/money/business/2013/09/08/chronology-2008-financial-crisis-lehman/2779515/

Van Tulder, R., Verbeke, A., Piscitello, L. and Puck, J. (Eds) (2022), "International business in times of crisis: what perspective to take?", *Progress in International Business Research*, Vol. 16, Emerald Publishing, Bingley, pp. 3-24.

Warner, K. and Wäger, M. (2019), "Building dynamic capabilities for digital transformation: an ongoing process of strategic renewal", *Long Range Planning*, Vol. 52 No. 3, pp. 326-349.

Wilhelm, H., Schlömer, M. and Maurer, I. (2015), "How dynamic capabilities affect the effectiveness and efficiency of operating routines under high and low levels of environmental dynamism", *British Journal of Management*, Vol. 26 No. 2, pp. 327-345.

Wirtz, J. and Zimbres, T. (2018), "A systematic analysis of research applying 'principles of dialogic communication' to organizational websites, blogs, and social media: implications for theory and practice", *Journal of Public Relations Research*, Vol. 30 Nos 1/2, pp. 5-34.

Witcher, B. and Chau, V. (2012), "Varieties of capitalism and strategic management: managing performance in multinationals after the global financial crisis", *British Journal of Management*, Vol. 23, pp. S58-S73.

World Health Organization (WHO) (2020), "Past pandemics", available at: www.euro.who.int/en/health-topics/communicable-diseases/influenza/pandemic-influenza/past-pandemics

Zahra, S., Petricevic, O. and Luo, Y. (2022), "Toward an action-based view of dynamic capabilities for international business", *Journal of International Business Studies*, Vol. 53 No. 4, pp. 583-600.

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