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The Great Reset: Shifting contours of businesses in emerging markets

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The Great Reset: Shifting contours of businesses in emerging markets

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Abstract

Unanticipated external shocks such as the Covid-19 (C-19) pandemic exert pressure on organizations to revisit their strategic imperatives while concurrently demanding attention to immediate issues that may disrupt their operations. The impact is exacerbated in the context of firms in emerging markets, given the labour intensity and their challenging economic climate. Using the lens of organizational change management, the paper synthesizes an ontological framework that serves as guiding tool for the qualitative empirical analysis of responses by firms to C-19. Relying on a systematic gathering of multiple data sources like annual reports, newspaper articles, legal disclosure documents, industry specific economic outlook reports and semi-structured interviews, the paper posits a 2 x 2 typology of firms based on their labour intensity and essentiality in the context of C-19. We then map firms in the different industries to this typology and structure the responses by firms in each category along dimensions such as (i) immediate responses, (ii) strategic changes, (iii) sustenance and recovery mechanisms and (iv) outlook for the future. Subsequently, we revisit the ontological framework in light of our analysis and leverage the metaphors of different types of channels that arise in the flow of rivers to delineate salient themes in firm responses such as meandering, braided, rapids and reserve sourcing. Finally, we offer policy recommendations for governments and firms in emerging markets on how they can attenuate the impact of such events, especially on vulnerable stakeholders such as the informal migrant workforce.

Keywords: Labour intensity, essentiality, immediate responses, structural changes, sustenance mechanisms, ontological framework, change management

1. Introduction

The COVID-19 (hereafter C-19) pandemic and the associated national lockdowns have triggered unprecedented health, social and economic crises worldwide. While the pandemic is testing the resilience of most advanced nations and corporations, industrial firms in emerging markets, such as India, Bangladesh, Brazil, Indonesia, Philippines, South Africa and Thailand, are particularly vulnerable, given their labour intensity and challenging economic climate. Most monitoring bodies have painted a grim picture of the manufacturing sector's health in emerging markets during the pandemic. For instance, the index of industrial production (IIP) reported by the Ministry of Statistics and Programme Implementation, Government of India, revealed steep declines in industrial output during the period from April to July (with a maximum decline of 66 per cent).

Various industries in the manufacturing sector faced restrictions in their operations, exodus of labour, demand fluctuations, supplier irregularities and other crippling effects triggered by the pandemic. National governments, for their part, had to tread a fine line between the smooth functioning of industries and containing the transmission of the virus to safeguard citizens' health. Any misstep on either side could trigger an economic calamity or exacerbate the pandemic situation. Most governments in emerging markets deployed stringent lockdowns to buy more time and prepare their responses in critical areas. This meant that industries had to wait and watch and roll out their responses when they were allowed to resume their business activities.

Emerging markets and developing countries are characterized by significant unstructuredness in business conditions coupled with inherent complexities that exist in their social and cultural milieu. A case in point is India's business environment and cultural setting. The turbulent environment resulting from an often-volatile political situation, rapid economic fluctuations, transitional social environments and physical, informational and technological infrastructure that leave much to be desired leads to the inability of business organizations — both local and multinational — to respond in a structured deterministic manner (Venkatesan, 2013). Inflexible labour markets, ambiguous legal systems and regulatory uncertainty only add complexity to the existing chaos in such business environments (Li et al., 2011). Market diversity between different locations within the country and the power of bureaucracy bury any semblance of order even deeper (Ramachandran, 2000). Emerging markets are thus characterized by deficiencies in institutional conditions, such as institutional voids, including capital market, regulatory, contractual and labour market voids (Gao et al., 2017). In such environments, organizations (and therefore people in organizations) face inordinate difficulties in tackling and responding to such voids, making it a far more challenging environment to effectively function in given the high

uncertainty and instability such voids result in (Hoskisson et al., 2000). Responses to the pandemic have thus significantly drawn from the strengths of the chaos itself. One response, unique to emerging markets, has been *frugal innovations*, a term used to denote creative solutions and workarounds (Cappelli et al., 2010; Dabholkar and Krishnan, 2013), a phenomenon resulting from a culture of scarcity and constraints, a feature of the chaos itself. Another response has been the high reliance of entrepreneurs on network partners and ecosystem collaborators, although the effectiveness of such support is contingent upon cultural norms (Soluk et al., 2021) and evolving priorities against the backdrop of the pandemic.

Though it was widely speculated that possible great resets in businesses are in order in such contexts, making sense of precisely how corporations are dealing with C-19 is essential to predict the imperceptible gradual shifts in the contours of industrialization in a post-pandemic world. Our research objectives in this paper are therefore: (i) to understand how manufacturing firms in emerging markets are responding to C-19; (ii) to probe whether the changes adopted will only remain in place temporarily or whether they are likely to persist and create a new equilibrium. While organizational studies traditionally aim to analyse firms' responses to learn from each other's successes and failures, the rarity of crisis situations such as a global pandemic has meant a considerable lack of 'prior' experience and hence an absence of learning from the past. Our objective, through this study, is therefore to highlight how firms have meandered through the challenges, braiding their responses drawing upon their dynamic capabilities, with some rapidly adopting shifts in their business continuum while others dipping into their rainy-day reserves. We believe that such an analysis will reveal much about the mechanisms through which we can transcend the limited resources of our 'past experiences'.

The rest of this report is structured as follows. We provide an account of the challenges faced by industrial firms in emerging and developing country contexts. Next, we posit the key factors that dictated the responses of different industries. We then categorize the industries into four clusters based on these key factors and outline the responses of firms in each cluster. Economies of the developing countries are distinguished from their developed counterparts by the overwhelming prevalence of informal businesses and micro, small and medium enterprises (MSMEs), along with their reliance on 'doing more with less' as a means to sustain themselves in a resource-constrained environment. We take an in-depth look at the impact of C-19 on MSMEs and their diverse responses to the situation, followed by anecdotal evidence of frugal innovations, accelerated digitization and value co-creation. Finally, we synthesize the discussions, drawing from our ontological framework that represents a theoretical abstraction of firm-level responses to C-19.

We conclude our discussion with implications and an outlook for firm strategies and government policies in the immediate future in the context of emerging markets.

2. Challenges for industrial firms due to C-19

The sudden onset of C-19 coupled with its economy-wide impact caught the manufacturing sector off guard. The pandemic's adverse effects exceeded the resilience boundaries established by firms for crisis situations, and nearly disrupted all aspects of production and distribution. In this section, we draw from academic literature and secondary data published in the popular press¹ and annual reports (ARs) of companies across different emerging markets (more details are mentioned in Section 4 on Research Methodology), statements and regulatory filings to capture the different facets of the challenges faced by industrial firms to keep their business afloat during the pandemic. These facets, in turn, motivated the firm-level responses.

Duality in demand for industrial products. C-19 and the associated lockdowns had a dramatic impact on demand for industrial products. Firms either experienced an unexpected increase or a steep decrease in demand, depending on the criticality of their products for everyday use in people's lives, often determined by the government and consumers. Specifically, those products and their associated raw materials which were perceived as *needs* (essential goods for people to live their everyday life) by the government and consumers, and required a steep production ramp-up:

Britannia Industries said it will invest Rs 700 crore to open more factories as demand for packaged food, including biscuits, has exceeded production capacity with rural markets outpacing urban sales. ... revenue growth was also due to interim opportunities that became available - local bakeries were closed, and several of the other snacking options were also out of reach or being avoided by consumers due to hygiene-related fears. These factors drove a much higher-than-normal consumption of packaged foods. This phenomenon is likely to last for some more time (Economic Times, 21 July 2020).

Likewise, health and safety products required for social distancing and better hygiene also saw a rise in demand:

¹ Names of newspapers and magazines are mentioned within parenthesis in the quotes from the articles; AR refers to the annual report of the company mentioned.

Heightened awareness for personal hygiene in the wake of the COVID-19 pandemic led to a surge in demand for products in the 'Health and Hygiene' portfolio such as hand sanitizers, handwash, antiseptic liquids and floor cleaners (ITC Ltd, AR 2019-2020).

This also generated a snowball effect on firms that were supplying components and raw materials to health and hygiene product manufacturers:

The demand for chlorine-based value-added products, which are in turn used in health and hygiene products such as disinfectants, witnessed a big spike in the last quarter of the financial year, helping this segment end FY 2019-20 with a 10% YoY growth (Grasim Industries Ltd, AR 2019-2020).

In sharp contrast, products that were perceived as *wants* (goods that are nice-to-haves rather than must-haves) witnessed a sudden decline in demand:

The stringent lockdown measures enforced in India led to almost no sales (in automobiles) in the months of April and May 2020 (Maruti Suzuki India Ltd, AR 2019-2020).

Taking into account India's position as a preferred destination for sourcing textile and apparel products by leading brands worldwide, Indian garmenting sector is getting impacted with deferment and cancellation of orders (Raymond Ltd, AR 2019-2020).

Paint being a discretionary spend item, there is a likelihood of customers putting their paint requirements on hold for some time, impacting renovation demand. (Asian Paints Ltd, AR 2019-2020).

A similar snowball effect was also observed due to decreases in demand for such discretionary products and services:

...our products being durable and non-essentials in nature, it's repeat purchases are minimum. During the pandemic period, consumers preferred their spending for essential and health care items when consumers are directed to stay at home and visiting restaurants and hotels were discouraged. As a result, demand for hospitality wares during March – June 2020 period substantially went down (Shinepukur Ceramics Ltd, AR 2019-2020).

The sudden increases or drops in demand posed considerable challenges for firms since they had to either deal with all of the negative consequences of reduced/no sales or address spikes in demand in the midst of a pandemic.

Labour shortages. Labour in the Indian context is dominated by a migrant workforce that moves from rural to urban centres in search of a livelihood. A large share of them are subsistence workers who do not have deep pockets and cannot afford extended periods of unemployment. The sudden enforcement of lockdowns in India complicated their situation and worsened their already precarious economic conditions, leaving them with the prospect of extended periods of unemployment. With no work in hand and little savings to support their families, a significant proportion of the migrant labour chose to return to their native villages. Although the lockdown was gradually eased over the second and third quarters of 2020, firms reported labour shortages since the workers had yet to return to work:

Even though (the) Fertilizer Sector is exempted from lock down as being an essential commodity; lockdown posed a number of challenges for continuous operation of fertilizer plants. For instance, there was shortages of availability of labour at plant sites for loading and for unloading at destination points (Southern Petrochemical Industries Corporation Ltd - SPIC, AR 2019-2020).

These labour shortages caused problems for firms because they could not keep their shop floor fully functional.

Liquidity stress. Disruptions in operations coupled with contractions in demand led in some cases to acute pressure on industrial firms' cash flows.

As such our business activity is export based it took a great hit with virtually no demand, inventory piling up and losing value with the lapse of time....for us the business has come to almost standstill with order cancellation, price reduction and non-payment issues, creating a situation where the core basis of business, that being trust and integrity took a big hit and credibility took a pause to a certain extent (Saiham Cotton Mills Ltd, AR 2019-2020).

While large corporations managed such liquidity challenges with relative ease, MSMEs and the informal sector faced a severe crisis:

Sudden halt of the business with the start of the lockdown put significant pressure on (the) cash flows of some business partners like suppliers and dealers. (Maruti Suzuki Ltd, AR 2019-2020).

A sharp decline at the operating level will also impact creditworthiness, aggravating the liquidity stretch these units (MSMEs) have been grappling with, particularly on the working capital front, [CRISIL] cautioned in its study (BusinessToday.in, 2020).

Supply chain disruptions. Although large corporations are pivots in the ecosystem in an emerging market context, their supply chain often depends on an informal network of MSMEs that act as suppliers, distributors, retailers and other partners. This network operates on the principles of social trust and peer pressure. The informal arrangements between MSMEs and corporations may not be based on any formal contracts. Suppliers/distributors lend their goods/services with the expectation that the ex-ante commitment will be honoured, while corporations rely on these MSMEs to meet the quality, quantity and timeliness standards based on past experiences and with the promise of future business relationships.

While such an arrangement may work well in a ‘business-as usual’ situation and reduces unnecessary transaction costs, it could be a recipe for chaos during volatile times such as those we are currently experiencing due to C-19. For example, corporations might be unable to pay MSMEs for their completed work and MSMEs may not be able to meet deadlines. Moreover, while firms invest in securing their relationships with tier 1 and tier 2 suppliers, they hardly have any control over the supply chain beyond that. When such suppliers extend beyond the local area or to other nations, it has crippling effects. Our observations on social media forums and our archival data suggest that the supply chains of industrial firms experienced severe disruptions:

Availability of consumable materials such as bags and chemicals which are required for operations also posed challenge in some plants. As a result, the movement and sale of fertilizers were affected during (the) second fortnight of March 2020. (SPIC, AR 2019-2020).

As mentioned earlier, issues faced by one actor in the supply chain had a cascading effect on the other actors, thereby disrupting the entire supply chain.

Surge in input costs. As a direct consequence of supply chain disruptions with suppliers no longer able to run their business as usual, the input costs of large industrial firms increased significantly, causing further stress on their liquidity:

Given the overall uncertainty in business conditions, raw material prices as well as exchange rates are expected to exhibit increased volatility. (ITC Ltd, AR 2019-2020).

Change in customer preferences. Industrial firms had to also deal with unanticipated changes in customer preferences. With reduced discretionary spending, heightened sensitivity towards health and more emphasis on savings to secure their uncertain future, firms had to rebrand their existing goods, create new products or temporarily shelve certain products. For instance, with regard to transportation, consumers now preferred personalized smaller vehicles that would allow them to avoid physical proximity to people

The initial trends suggest that the consumer interest is shifting towards personal transportation. Given the weaker economic condition and reduced disposable incomes, the initial trends also suggest that the customers are preferring smaller cars. With the increase in fuel price of diesel and relatively high cost of acquisition in BS-VI diesel cars, customers could shift towards CNG- and petrol-run cars (Maruti Suzuki Ltd, AR 2019-2020).

This has contributed to the costs of research and development (R&D), production and inventory handling, thereby creating additional economic challenges.

Economic dependencies. Given that C-19 has had an impact on most businesses and nations, it has unravelled and brought the deep-rooted interdependencies of the globalized world to the fore. It has demonstrated that a change in a small segment of an ecosystem has ripple effects on other parts of the economy. Firms usually have little control over the development in industries outside their core and hence have had to bear the brunt of the general challenging economic climate. For instance, the void left behind by the absence of labour in the construction sector had an impact on the sale of paints:

The paint industry would also have to wait for the return of the migrant workforce to support the demand-generating sectors such as real estate and infrastructure development (Asian Paints Ltd, AR 2019-2020).

The steel industry, which is an essential industry, reported considerable demand from the automotive and construction industries while liquidity in the power industry was dependent on collections from power distribution customers:

However, several steel-consuming sectors, particularly automotive, infrastructure and construction, were severely impacted, leaving a spill-over effect on the steel industry. We witnessed a fall in capacity utilisation levels, primarily due to a significant reduction in demand from our key customer segments. (Tata Steel Ltd, AR 2019-2020).

An adequate provision for doubtful debts pertaining to its franchised distribution business units has been made in the standalone financial statements, after factoring an anticipated reduction in collection efficiency in those areas. In case of licensed distribution business, no additional bad debt provision is required due to largely unaffected collection efficiency and availability of adequate security deposits from customers (Torrent Power Ltd, AR 2019-2020).

As the evidence above demonstrates, from a systemic perspective, an aberration in the circumstance of one actor had spill-over effects on several actors.

Challenges due to restrictions. The pandemic posed a huge challenge for different levels of government in terms of maintaining the delicate balance between ensuring business continuity to prevent an economic meltdown and the need to ensure that the C-19 scenario does not spiral out of control. The government had to be extremely vigilant and at the same time remain flexible in terms of enforcing lockdowns in different regions. This, however, made it extremely taxing for businesses to plan work schedules using their already reduced labour force. Furthermore, there were also restrictions on the number of days on which production facilities could remain operational within a week and the number of hours each day, among others:

In the metros and Tier 1 cities, the business is slow and, in some cases, yet to pick up due to the higher number of red zones, restrictions on movement, lack of availability of labour and strict norms followed by housing societies. (Asian Paints Ltd, AR 2019-2020).

Volatility and uncertainty. A combination of all of the challenges discussed in this section have created an extremely volatile and uncertain environment for business in general:

Given the overall uncertainty in business conditions, raw material prices as well as exchange rates are expected to exhibit increased volatility (Asian Paints Ltd, AR 2019-2020).

This (C-19) has not only affected production targets for the next financial year but has also led to uncertainty in terms of availability of manpower and expertise to continue the capacity expansion projects (JSW Steel Ltd, AR 2019-2020).

Consequently, the financial markets became extremely volatile in the initial days of the lockdown as people resorted to impulse buying and panic selling.

To summarize, C-19 altered demand, had an impact on the availability of labour, caused liquidity issues, disrupted entire supply chains, heightened the costs of production, reshaped consumer preferences and created a VUCA (volatile, uncertain, complex and ambiguous) environment for business in general. Industries were required to come up with urgent measures to steady the ship, while keeping an eye on the ever-evolving health situation and developing dynamic strategies for the future.

3. Background literature

Amongst the various drivers of change embedded in the dynamic environment industrial firms operate in, such as energy concerns, disruptive technologies, trade barriers, security issues, environmental regulations, customer demands and shift in taxation regimes (Hameri and Hintsa, 2009), natural disasters and pandemics exert considerable pressure on them to adapt their operational and strategic direction. While some of these drivers, such as evolving customer demand, might allow firms to implement planned or incremental changes, the suddenness with which some drivers such as pandemics can occur require rapid transformational changes on the part of organizations in order to survive (Amis and Greenwood, 2021). Responses to planned and contingency-based changes introduced in organizations have been termed organizational change management (OCM). OCM can be understood as the process of ‘renewing an organization’s direction, structure, and capabilities’ (By, 2005, p. 369) in order to serve the dynamic needs of its stakeholders (Kirsch et al., 2011).

Scholars suggest that OCM driven by crisis situations such as the C-19 pandemic are novel exogenous shocks, singular in nature, transcend any past experiences, rendering assumptions about possible responses questionable (Amankwah-amuah et al., 2021). Such events differ from others due to their abrupt and ecosystem-wide impact, thereby requiring organizations to consider a number of stakeholders (e.g. employees, customers, suppliers) while designing, deploying and assessing the OCM (Amis and Greenwood, 2021). While managing OCM in such situations may seem overwhelming for organizations, scholars point out the need to go beyond ad-hoc fixes to develop systematic yet expeditious coping mechanisms (Baveja et al., 2020). In this regard, the

literature emphasizes how organizations need to navigate the present while concurrently planning for the future (Meyer et al., 2020). Consequently, organizations need to cultivate a set of *approaches* to update the operational processes that serve their pressing needs and at the same time develop organizational *strategies* that will help them thrive in the light of the ‘new normal’ (Buchheim et al., 2020; Donthu and Gustafsson, 2020).

Organizational strategies revolve around discerning the pandemic’s implications and orchestrating plans to counter those implications (Donthu and Gustafsson, 2020). Industrial firms must evaluate the potential damage suffered by their suppliers, measure demand disruptions to decipher how to shape demand, identify bottlenecks related to critical business operations, understand the effects on the workforce and develop dynamic models to assess limiting agents or plan scenarios to address the evolving situation (Ivanov, 2020). Strategies to develop new business models² that exploit emerging opportunities created by C-19 (e.g. foray into manufacturing health care products) or that drive business model transformations to run their business in the face of the constraints imposed by the pandemic may provide firms viable alternatives for survival strategies (Donthu and Gustafsson, 2020). Firms’ approaches are based on the immediate responses that must be performed, including shutting or scaling down operations if needed, devising work from home procedures and helping employees affected by the pandemic, among others (Buchheim et al., 2020).

The strategies and approaches discussed above target organizational change or transformation through *activities* at three levels – at the level of *value chains*, *supply chains* and the *ecosystem* (Baveja et al., 2020; Ivanov, 2020; Sharma et al., 2020). Within the firm, C-19 has necessitated changes across the value chain. Firms were required to proactively source inputs in anticipation of disruptions, approve substitutes for inputs that could not be sourced, redesign processes to safeguard workers’ health, design steps to manage production with a reduced workforce, modify product designs if needed, and alter distribution methods to ensure last mile access, among others (Meester and Ooijens, 2020). Beyond the boundaries of the firm, organizations need to enhance the visibility of their supply chain by understanding their suppliers’ pain points, assessing their capacities, monitoring delivery status, securing alternate suppliers when the primary suppliers are

² Business model is ‘an abstract representation of an organization, be it conceptual, textual, and/or graphical, of all interrelated architectural, co-operational, and financial arrangements designed and developed by an organization, as well as all products and/or services the organization offers based on these arrangements that are needed to achieve its strategic goals and objectives.’ (Al-Debi et al., 2008, p. 7)

dysfunctional and providing assistance wherever applicable (Ivanov, 2020). At the level of the ecosystem, resources from different organizations are pooled to overcome temporal deficiencies that have arisen in the wake of the pandemic and solutions are developed through collaborative competencies (Jaakkola and Hakanen, 2013). Such pooling can be service request pooling or demand pooling, which allows for optimal use of resources while enhancing efficiency to meet market demand.

These *enablers* and *activities* involved in OCM are aimed at achieving desirable *outputs* such as building organizational resilience and ensuring the safety of employees, among others (Rajesh, 2020). Resilience in this context refers to the ability of the organization to remain flexible to new external pressures and to continue functioning despite modest availability of resources during emergency situations such as C-19 (Bhamra et al., 2011). Safety, on the other hand, refers to the organization's ability to provide a safe and secure environment within the organization where employees can continue to be productive and work during pandemic times (Caligiuri et al., 2020). Such outputs help organizations achieve more abstracted *outcomes*, such as business continuity and profitability.

Although C-19-driven lockdowns are largely exogenous to organizations, scholars suggest that some organizations are better equipped to endure the stress despite shocks in their environment or to recover faster even if they are temporarily not allowed to operate (Ritter and Pedersen, 2020). Organizational policies such as risk assessment, scenario planning and the subsequent infusion of anticipatory flexibility, preventive capabilities, backup and recovery mechanisms enable them to be better equipped when such unforeseen events arise (Herbane et al., 2004). Likewise, outcomes such as employment depend on the ability to engage employees by developing work from home (WFH) policies, create a conducive work environment, redirect people to priority areas and financially support those whose services cannot be utilized (Kniffin et al., 2021).

3.1 Synthesizing an emergent ontological framework

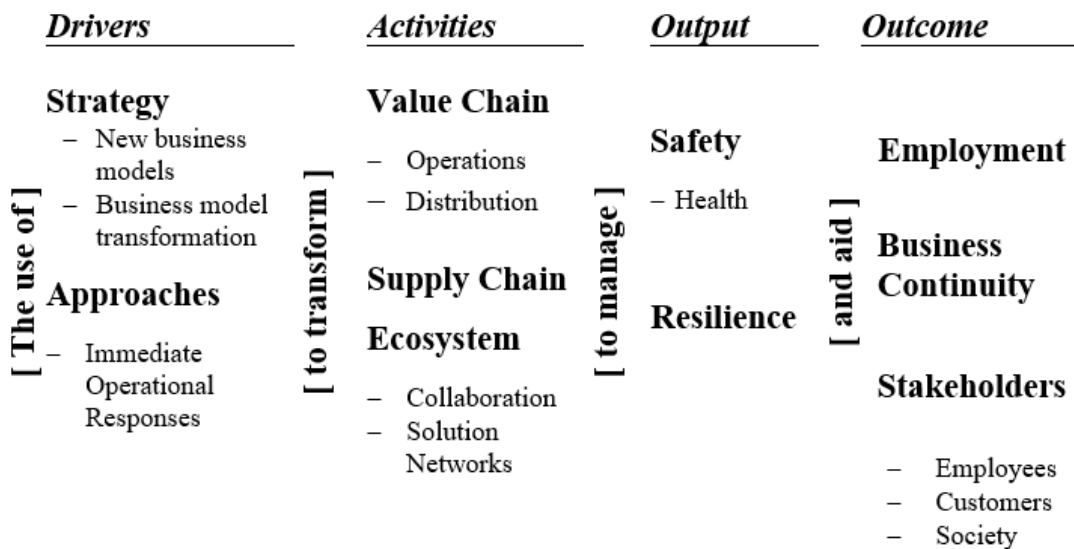
We adopt the strategy proposed by Ramaprasad and Syn (2015) to synthesize our discussion of the literature on organizational change and crisis management alongside our analysis of the challenges firms have faced due to C-19. Following their guidelines, we “deconstruct the problem into its basic dimensions and corresponding taxonomies” (p. 140). The different dimensions involved in representing a problem can be organized into an ontological framework that enables the encapsulation of the ideas into a readily accessible figure. We synthesize the various aspects from the literature reviewed into Figure 1. The framework, anchored in OCM literature, represents

the responses by industrial firms after they had to spring into action due to the C-19 pandemic. We present an ontology of firm responses to C-19 and acknowledge that there may well be other valid ontologies.

The ontological framework can be understood as follows. Each header (column) in the framework such as ‘enablers’, ‘activities’, etc. represents an important category associated with the impact of C-19 on industrial production. Each row within the headers refers to sub-categories associated with the header. Concatenations across the columns along with connecting words presented vertically (adjacent to the columns) form logical English sentences that represent responses to C-19 by manufacturing firms. For instance, if the word ‘immediate operational responses’ is selected from the enabler column, ‘value chain’ from the activities column, ‘safety’ from the output column, ‘business continuity’ from the outcome column, ‘employees’ from the stakeholder column and the vertically aligned connectors are leveraged, the response can be constructed.

‘The use of immediate operational responses to transform the value chain to manage safety and aid business continuity in industrial production and to support employees’

Figure 1: Basic ontological framework of responses by firms to COVID-19



Source: Authors’ elaboration

The framework parsimoniously encapsulates the range of responses employed by manufacturing firms to fight the impact of C-19 on the industrial production ecosystem. When fully enumerated, it provides all of the permutations and combinations of possible responses. While all of them would form logical English sentences, not all of them may make semantic sense in the real world and may hence be infeasible states. However, those that are feasible can help guide our qualitative study. We invoke this framework and use it as a theoretical lens to underpin our subsequent data analysis and interpretations.

4. Research methodology

Since little is known about the nature of responses by industrial firms in emerging markets, we undertake an exploratory qualitative inductive approach to our research. We use a heuristic inductive approach and immerse ourselves into the setting, taking note of the nuances and meanings within that setting to gain a more in-depth understanding based on which we explicate the experience of firms, and finally synthesise all individual firm experiences a ‘whole’ (Janesick, 2000). Our study moves from the ‘specific’ to the ‘general’, where the different types of context-specific qualitative evidence we have collected is analysed to provide insights that are transferable to other similar emerging market contexts. We study multiple organizations across different industries within the manufacturing space which allows us to conduct within- and cross-industry comparisons. A study of multiple organizations facilitates a ‘crystallization’ of findings (Richardson, 2000), resulting in “deep, thickly described, complexly rendered interpretations” of the phenomenon we are studying (Ellingson, 2009, p. 10). Our interpretation of firm responses to C-19 are thus more robust and transferrable outside the contexts of the firms studied.

4.1 Data sources

Our data sources included archival secondary data and semi-structured interviews (see Table 1 for a summary). We gathered secondary data from the rich public data sources on industrial firms. First, we analysed the annual reports of publicly listed companies which are required to communicate their strategic and operational responses to shareholders. We identified seven countries as representative of developing economies (United Nations, 2020), focusing primarily on Asia: India and Bangladesh from South Asia, Indonesia, Philippines and Thailand from Southeast Asia, and two countries outside the Asia region, one each in Africa (South Africa) and South America (Brazil). The GDP of these countries ranged from around USD 300 billion to USD 2.6 trillion. A total of 64 firms listed in the main stock exchanges of each of these countries were selected and care was taken to ensure that they represented different manufacturing industries

such as steel, paints, automobiles, FMCG, cement, farm equipment, pharmaceuticals, agricultural inputs, leather products, gems and jewellery, chemicals, textiles, among others. We chose India as our primary country of analysis and use the other six countries as comparison contexts primarily for literal replication but also for theoretical replication, given the nuances of the economic contexts of each of the seven chosen countries. The last available annual reports of these 64 firms were accessed from their respective company websites. Since the corporate financial year differed across countries and annual reports were released accordingly, the responses of firms in some countries incorporated post-lockdown actions.

Table 1: Summary of the data collected

Type of data	Description of data	Data
Secondary/archival data		
Annual reports of manufacturing firms	Annual reports of manufacturing firms across different industries. They include steel, paints, automobiles, FMCG, cement, farm equipment, pharmaceuticals, agricultural inputs, leather products, gems and jewellery, chemicals, textiles, among others.	Annual reports ³ of 64 firms from India (44), Bangladesh (6), Brazil (2), Indonesia (3), Philippines (3), South Africa (3) and Thailand (3).
Newspaper articles on MSMEs ⁴	Retrieval of news articles from reputed sources using the ProQuest database for information on how MSMEs responded to C-19. Keywords used were 'Covid-19' or 'Corona' or 'Pandemic' and 'MSMEs' or 'SMEs'. (newspapers and magazines such as Businessline, Financial Express, Mint, EconomicTimes, JakartaPost)	500 articles from March 2020 to January 2021

³ Quotes from the Annual Reports of firms analysed have been mentioned as 'AR' following the name of the firm.

⁴ MSMEs refers to Micro, Small and Medium Enterprises. Since annual reports are mostly not available for MSMEs, we relied on news articles from the ProQuest Database.

Type of data	Description of data	Data
Listing Obligations and Disclosure Requirements (LODR) filings	The regulatory filings by publicly listed companies in two large stock exchanges in India ⁵ related to the 'Material Impact on Covid-19' as mandated by SEBI ⁶ .	250 reports
Semi-structured interviews		
Interviews with MSMEs	Interviews with owners, entrepreneurs and senior executives of MSMEs in different states in India to understand how C-19 has disrupted their business and that of their large customers, if any.	4 in-depth interviews

Source: Authors' elaboration

⁵ BSE refers to Bombay Stock Exchange, the oldest stock exchange in India and NSE to National Stock Exchange, the biggest stock exchange in India.

⁶ SEBI refers to the Securities and Exchange Board of India and is the government-owned board to regulate the securities and commodity markets in India.

Next, given that MSMEs dominate emerging market contexts, very few of which are listed on stock exchanges, but play an important role in industrial production, we collected data on them using articles published in the popular press. We used the ABI/Inform ProQuest database and entered the following search string to find articles (“MSME” or “SME”) AND (“Covid” OR “Coronavirus”) AND <<country name>>. In total, we downloaded 11,000 articles of which 500 were identified as directly relevant for our analysis. We also downloaded 250 short reports on filings by firms listed in the Bombay and National Stock Exchanges in India. These reports were mandated by SEBI under the Listing Obligations and Disclosure Requirements for firms listed in the stock exchanges (SEBI, 2020).

Firms were expected to report on the overall impact of C-19 on their business; their ability to maintain operations; the planned schedule for restarting their operations; steps taken to ensure smooth functioning; the impact on the firm’s capital and financial resources, profitability, liquidity position, ability to service debt, assets, internal financial reporting and control, and the expected future impact on its operations. The majority of firms submitted structured reports and focused only on the items listed for disclosure. Some firms also used this opportunity to present their planned response and anticipated risks.

To enhance the analysis of the secondary data, we also conducted semi-structured in-depth interviews with MSME owners. Since our research focuses on the ‘how’ and ‘why’ questions related to C-19 responses, these interviews served to supplement the secondary data by providing an in-depth look into the realities on the ground. Each interview lasted approximately 45 minutes to 60 minutes. The four interviewees were owners of (1) a leather processing firm, (2) a textile mill, (3) a sanitaryware manufacturer and glass distributor, and (4) an entrepreneur who has various businesses, including a rural bus service, food grain processing factory and construction material retail.

4.2 Data analysis

We compiled, cleaned, filtered and organized the different forms of data including popular press articles, annual reports, regulatory filings and interview transcripts and notes. We used NVivo 12© software for data management and qualitative coding. We carried out a qualitative thematic analysis of our data to identify systematic patterns known as themes (Braun and Clarke, 2012). In this approach, the raw data is used to establish various broad categories. Each category represented a certain snippet of the data. After determining a set of categories, we looked for similarities and differences between them to distil them into codes. Codes represent phrasal descriptors (labelled by the research team) that accurately represent the language in the data. They

were assigned to recurrent categories within the data. We looked for patterns among the codes (similarities and differences) to further distil them into emergent themes (Braun and Clarke, 2012). We then leveraged these emergent themes to understand and explain the phenomenon. Table 3 in the Appendix presents some sample quotes to highlight the process of coding.

We present our findings and interpretation in three parts. We begin with a discussion on the responses of large industrial firms, followed by those of MSMEs, to present innovative responses in the context of emerging markets.

5. Responses by large industrial firms

5.1 Determinants of responses

Our analysis reveals that industrial firms' responses to C-19 depended on two key factors – the first being the 'degree of essentiality' of the product or solution offered by the firm and the second being their business processes' 'degree of labour intensiveness'. These two key factors can be attributed to the very nature of the pandemic, i.e. contagion through human social contact and therefore, the need for social distancing. The first factor was largely determined by the government, which classified industries as essential or non-essential depending on its perception of whether the industry's output met the country's pressing needs during the pandemic. Industries whose output was considered to be essential by the government (and in part by consumers) were allowed to remain in operation and were exempt from the stringent lockdown restrictions. The latter factor was a function of the labour intensiveness of the industry's business processes in general, and the degree to which the firms in the industry had automated its processes prior to the onset of the pandemic. Given that labour is relatively cheaper in an emerging market context and because firms operating in countries like India had to honour commitments to create jobs for the local population, firms did not always automate processes and depended considerably on human labour for their operations.

In summary, industries could either be classified as having high or low essentiality and high or low labour intensiveness. Although our classification on both dimensions is based on a continuum, we drew on the various classifications issued by relevant ministries in different countries, for the dimension of essentiality. In India, the Ministry of Home Affairs' classification of essential commodities and services permissible during lockdown and during times of restricted movement (MHA, 2020) was used. We also found similar provisions issued in the other countries included in our analysis, such as in Indonesia where the large-scale social restrictions (locally referred to as *PSBB* for *Pembatasan Sosial Berskala Besar*) distinguished 11 industries as being

essential, and included health, food and beverages, daily needs retailers, energy, steel, banks, communications, logistics and strategic industries in the capital. However, in other countries such as Brazil, the list of essential products and services was more generous (Brazil, 2020). We consolidated the list of essential products and services but also accommodated specificities as mentioned by the respective firms in their annual reports.

We use the method developed by Sen and Das (2015) to identify the labour intensity of different industries. We also acknowledge three challenges in using a standard classification. First, capital intensity increased over time in both labour-intensive as well as comparatively more capital-intensive industries (Basole and Narayan, 2020). Second, as we will explain later, in some industries, the unorganized and MSMEs sector are far higher in their labour-intensity than the organised large-scale enterprises of the same industry - such as food processing and metallic products. Third, although the core processes of some industries, such as electronics and electrical appliances, fertilizers and chemicals or cement, are not inherently labour-intensive, but their component manufacturing, i.e. their secondary supply and distribution chains, are labour-intensive. Hence, we use the L/K ratio (number of workers over fixed capital) which has traditionally been used to identify labour intensiveness with caution but complement it with anecdotal evidence of labour use in a particular industry, especially in the context of emerging markets.

Combining these dimensions gives rise to four clusters (2×2) within which industries can be positioned as demonstrated in Figure 2. Our analysis reveals that responses to C-19 were driven by the cluster the industry belongs to. We discuss the cluster-wise responses below.

Figure 2: Labour intensiveness-essentiality grid for industrial production during C-19



Source: Authors' elaboration

5.2 Responses

5.2.1 Cluster 1: Labour-intensive essential industries

The firms in this cluster operated under the major constraint that they are relatively more dependent on labour, a scarce resource during the pandemic. As a result, these firms were required to specifically focus on making do with the available labour and still meet the production requirements. Examples of industries in this cluster are fertilizers, textiles—especially essential goods that were in high demand during the pandemic—medical equipment and agro-food processing.

Immediate responses. Although the firms in this cluster are labour-dependent, they had to maintain their production volumes. Consequently, the key measures introduced included (i) drafting of health and safety protocols, (ii) redesigning their manufacturing processes to minimize social contact, (iii) introducing staggered work schedules, and (iv) a rapid ramping up of production.

Drafting health and safety protocols required the firms to factor in the labour intensiveness of their business processes. Hence, in addition to procuring health products such as hand sanitizer, thermal scanners, masks and cleansing agents, the protocols required the introduction of mechanisms that allow for social distancing among workers to ensure their safety. This was achieved by redesigning manufacturing processes on the shop floor to minimize physical contact. It entailed layout redesign, modularizing production to minimize cross-functional contact and incremental automation wherever possible to tide over the labour crisis (Dave, 2020).

Agro-processing firms, such as in the sugar industry, encouraged their supply partners, i.e., farmers, to adopt mechanized harvesting:

Availability of migrant labour for cane harvesting could be impacted. Deployment of local harvesting labour and self harvesting is being focussed upon. Farmers are being encouraged for wider row planting and for increasing the share of mechanised harvesting. (EID Parry Ltd, AR 2019-2020)

Given the essential nature of their products and services, firms in this cluster were required to ramp up production to meet increased demand. This was achieved by increasing work shifts while staggering work schedules and repurposing resources to critical areas.

We are also producing products that are needed in the face of COVID-19, which are masks and anti-virus personal protective clothing, which are currently in very high demand, so we increase the working hours of the relevant departments (Pt Sri Rejeki Isman Tbk, 3rd Quarter Report, 2019-2020).

Yet many firms dealt with distribution challenges due to the imposed lockdown. Where possible, firms responded by increasing their logistics capabilities:

Due to lockdown... sales & distribution activities of the company are significantly hampered... depends on a strong and prompt distribution network... the sales force could not achieve such target. To accelerate the sales revenue, distribution channels have been developed. More carriers' have been deployed to accomplish the logistic support for the distribution points and dealers. ...the sales force tried to reach the undeveloped areas to ensure our products were available in each and every corner of the country (Pran Agricultural Marketing Co. Ltd, AR 2019-2020).

Strategic changes. The essential nature of the products and services of the firms in this cluster meant that they could continue to operate despite the lockdown restrictions and had the opportunity to expand into products that were experiencing increased demand due to the pandemic. Textile firms, for example, ventured into the production of protective personal equipment (PPE) and masks. Some firms diversified into

...PPE manufacture and export in a big way and for achieving this objective... Massive investments have also been made for setting up a completely vertical manufacturing facilities for manufacturing Category 1 to Category 4 PPE gowns and all kinds of masks including N95 masks... production of the three-layer SMS fabric essential for PPE products... confident that ...become a global leader in this market segment (Beximco, AR 2019-2020).

C-19 also exposed the need for firms in this cluster to reduce their dependence on labour, at least in part. Hence, strong emphasis was placed by some firms on digitalizing their products and services, while also drafting plans to digitalize business processes to be better prepare for crisis situations. Through digitalization, firms could create better customer experiences:

...we have accelerated our pace of digital adoption and will be moving our channel and trade partners extensively onto digital platforms for trade bookings and other related activities. Our new digital infrastructure will lend us the competitive advantage to have a unified view of our inventory and will enable us to service our consumers across the length and breadth of the country through omni-channel (Raymond Ltd, AR 2019-2020).

Such digitalization was also observed in other industries

...increasing our online presence through tie-ups with different e-commerce platforms.... aim to increase our share of online sales by making our brands available across different platforms ...strengthen our position ...by way of collaborative planning, driving customisation and by ensuring higher discoverability of offers across different e-Commerce platforms (Ruchi Soya Industries Ltd., AR 2019-2020).

Recovery/sustenance mechanisms. Essential industries, especially those that produce essential goods for day-to-day life, such as food production, are expected to experience a fast recovery. However, recovery has been conditioned by the availability of labour in these industries.

Recovery involved efforts to remobilize the labour force by supporting the creation of more favourable socio-economic conditions for their survival in an urban environment and improved safety at the workplace:

A mass exodus of workers that followed India's harsh lockdown is forcing businesses to review their labour policies as they try to lure the people back with incentives as the economy reopens. While some companies are promising benefits such as free travel tickets, housing and food to draw workers to urban areas, others are managing by hiring new faces from nearby locations. Some are trying a mix of both (Beniwal and Sanjai, 2020).

5.2.2 Cluster 2: Non-labour intensive essential industries

The second cluster we identified includes industries that are non-labour intensive but produce essential goods and services. Given their low dependency on labour and the privileges accorded to these firms by the governments of various countries, industries in this cluster were relatively best positioned to address C-19 and its impact. At the same time, however, industries in this cluster faced the responsibility of having to meet nations' important needs during a time of crisis.

Some examples of such industries are power generation and distribution, chemicals, packaged foods, packaging materials, essential fast-moving consumer goods (FMCG) products, and health and sanitation supplies, among others. Firms in this cluster recognized their role:

HUL manufactures and supplies essential day-to-day products such as soaps, hand sanitisers, laundry detergents, floor cleaners, foods, beverages etc. amongst others and a large part of HUL's portfolio is considered essential to consumer requirements in these challenging times (Hindustan Unilever Ltd, AR 2019-2020).

The unprecedented COVID19 pandemic has put greater demands on the Company since transmission is an essential service and it was imperative to ensure availability of the network for uninterrupted power supply (Power Grid Corporation of India Limited, AR 2019-2020).

We categorize the responses of firms in this cluster along the key headers presented in Figure 2.

Immediate responses. The indispensability of the products produced by this industry meant that the firms had to navigate all of the obstacles they faced and deliver goods as usual or even meet increased demand. Cluster 2 firms responded by introducing (i) health safety precautions, (ii) a rapid ramp-up of production, and (iii) adoption of contactless delivery and distribution mechanisms to ensure that products are accessible to the people.

The enactment of health and safety measures involved the drafting of protocols to ensure that the premises of factories were periodically sanitized, hand sanitizer stations were placed at accessible locations, employees were trained to exercise physical distancing and checks were created at entry points to make sure that those with symptoms could not enter:

A process was put in place to manage risks related to COVID-19 by day-to-day health monitoring of all employees and sanitising the workplace with the highest standard. Social distancing measures go beyond plant boundaries and all transport vehicles adhere to stipulated needs outlined by the government (Britannia Industries Ltd, AR 2019-2020).

With mandates for social distancing, firms — especially in petroleum, oil and gas industries — have moved towards leveraging virtual training possibilities through technologies such as augmented and virtual reality. This enabled firms to train employees to minimize human error-

driven production losses, while ensuring employee safety during the training process (Sangani, 2020).

In addition, given their low dependency on labour, these firms were able to operate with minimal manpower and stagger work schedules to ensure that workers could achieve the required productivity levels while avoiding contact with others to the extent possible:

...company operated with only essential manpower during complete lockdown with necessary safety & social distancing measures like staggered shifts roster, flexible work hours ...standard operating procedure as per the guidelines ...during lockdown period (Mangalore Chemicals & Fertilizers Ltd, AR 2019-2020).

However, while drafting of standard operating procedures (SoPs) provided the necessary protocols for the functioning of employees, various socialization policies enabled organizations to impart and reinforce desired practices and behaviour among employees. Such policies included town hall meetings, providing incentives, training and establishing help lines, among others.

Firms that were required to produce higher than normal levels of goods had to channel their efforts to ensure that the most essential products were being prioritized. It necessitated firms to repurpose resources to critical areas and enhance their production capacity in those domains:

We are enhancing the capacities of home and hygiene products, which are extremely critical for our consumers in these times (Hindustan Unilever Ltd, AR 2019-2020).

The firms in these industries had to also ensure that their products reached their intended end consumers. Disruptions in the downstream supply chain meant that they could not exclusively rely on traditional channels to reach consumers.

...we entered the market of personal protection products for the healthcare industry, such as surgical masks and gowns, and hair and foot protectors, in order to replace imports and, additionally, bringing export opportunity. We are developing new sales channels for these products in Brazil and abroad through North American distributors and hospital products companies (Springs Global Participações S.A., AR 2019-2020).

Firms built innovative partnerships with companies specialized in contactless safe delivery of their products:

More than a dozen consumer goods companies including Hindustan Unilever [...], ITC, Mondelez, Procter & Gamble, Dabur and Colgate [...] have started selling products directly to consumers. That's circumventing traditional trade and distributor networks in areas where last-mile delivery has been disrupted due to Covid-19 restrictions. ...Their latest direct-to-home initiatives involve partnering startups such as Dunzo, Scootsy and Swiggy by listing brand stores on their portals and even reaching out to resident welfare associations (RWAs) through their sales staff (Peermohamed and Malviya, 2020).

Strategic changes. From a strategic perspective, firms focused on developing capacities to drive agility in their business operations. Firms thereby attempted to obtain greater visibility of their upstream supply chains to exercise greater control and achieve more predictability in the procurement of inputs, develop SoPs for employee productivity in an uncertain environment, and prioritize essential functions to optimize costs and roll out services to the broader society:

In these unprecedented times, we are falling back on the fundamentals to drive agility and responsiveness across our value chain. We have structured our response around five key imperatives, drawing strength from our values and guiding our strategic framework. The five workstreams that are serving as a foundation of our business and serving our multiple stakeholders during this crisis are – People, Supply, Demand, Community and Cost & Cash. ...Based on three key themes - Social Distancing, Handwashing and Generosity, the campaign disseminated short informative assets across India through television, news portals and prominent social media channels (Hindustan Unilever Ltd, AR 2019-2020).

In an environment of uncertainty, risk management emerges as a key capability of organizations. Organizations carried out scenario planning, developing response and recovery strategies for each of those scenarios. At times, firms also deployed 'digital twins of their business processes' to visualize the impact of disruptions (Furtado et al., 2020).

Recovery/sustenance mechanisms. Since business continuity was largely ensured in this cluster on account of the essentiality of their products, recovery mechanisms in this cluster focused on gradual rollouts of additional products that involved non-discretionary spending on the part of consumers.

While essential items, health and hygiene related products are expected to sustain the recent buoyancy in demand, discretionary categories and those with higher salience of

out-of-home consumption are likely to experience a more gradual recovery (ITC, AR 2019-2020).

Major positive drivers for recovery are ...rapid rise of e-commerce and food delivery, (relaxation of) lockdowns, allowing easier flows of goods across countries and ...government economic stimulus measures...NRF saw an increase in increase in revenue (from)... ready-to-eat, recipe mix and beverages products, increase in higher order volumes of ...(plant-based food) (NR Instant Produce Public Company Ltd, Management Discussion & Analysis, 2020).

A senior executive of a consumer products firm stated:

Factors such as the robustness of underlying demand for brands, depending on whether they are essential or discretionary, will change the equation for many consumer product companies. Also, other key factors will be ability to ramp up manufacturing capacity, constraints around labour and infrastructure deployment and whether MSME suppliers are able to ramp up their capacities as part of the entire supply chain (Businessline, May 20, 2020).

To trigger consumer demand, some firms in this cluster implemented approaches that involved reassuring consumers, undermining rumours, designing emotive marketing campaigns and switching channels, among others:

Many of our categories and brands have moved quickly to re-plan their innovations, adjust to consumers buying in different channels, and re-work brand communication to make sure that it remains consumer relevant (Hindustan Unilever Ltd, AR 2019-2020).

5.2.3 Cluster 3: Non-labour intensive non-essential industries

Although the products of the firms in this cluster were considered non-essential, they were not as constrained by the availability of labour. The non-munificent economic climate, however, meant that the firms had to come up with innovative ideas to reorient their products. Some examples of industries in this cluster included paints and varnish, electronics, electrical appliances and automobiles, among others.

Immediate responses. Firms in this cluster had to halt their operations during the initial phases of the complete lockdown. However, some of the firms in this cluster sought to expand their capabilities and produce goods outside their core business. The focus was on leveraging the idling

capacity of their available assets to create products that were more in line with current demands. Such extensions enabled firms to manage their cash flows in part at least:

The newly setup perfume manufacturing plant at Manpura, Himachal Pradesh was re-purposed in quick time to manufacture hand sanitizers and service increased demand (ITC Ltd, AR 2019-2020).

Strategic changes. Firms in this cluster attempted to diversify their products through logical extensions in their business models. Furthermore, efforts were channelled towards rebranding existing offerings, launching communication campaigns to enhance consumers' discretionary spending and provide accessibility to 'good-to-have' products at the consumers' doorsteps:

For an industry that is considered to have mastered the art of perception and persuasion, the present pandemic is proving to be a critical test of its skills. With everything an auto brand once stood for, now under threat—the fast life, speed, mobility and status upgrade—marketers are looking to create an alternative positioning platform, one that extends the scope of the brand beyond the remit of just wheels on the road. (Mohile, 2020).

Recovery/sustenance mechanisms. Sustenance in the short run largely depended on the firms' ability to be agile and stay consumer-relevant. Recovery in this cluster was slow and gradual in comparison to others, partly due to supply chain disruptions as well as to operational inefficiencies.

The speed of recovery in the industry created challenges in some links of the production chain and in the supply of raw materials, particularly in Brazil. Given the Company's timely actions, we were able to avoid significant volume losses, however, we had operational inefficiencies, such as increased overtime, increased frequency of tool set-ups and changes to production programs at our factories (Iochpe-Maxion, 4th Quarter Report, 2020).

For some industries, recovery also involved obtaining permissions to partially reopen their production and distribution facilities and convincing consumers to purchase non-utilitarian goods again, encouraging discretionary spending:

In all the sales locations, where shops selling non-essential goods are opening, a limited number of sales teams [are] continuing to work for some hours on alternate days (Asian Paints Ltd, AR 2019-2020).

5.2.4 Cluster 4: Labour-intensive non-essential industries

Firms in this cluster were hit the hardest by the pandemic. While the government classified these firms as having least priority during the stringent lockdowns, the unavailability of labour when the lockdowns were gradually lifted added to the challenges they were facing. Some of the examples of industries include real estate and construction, tourism and hospitality, leather, metal and metal products, cement, ceramics, consumer durables and non-essential retail.

Immediate responses. During the initial phases of the complete lockdown, firms in this cluster were left with little choice but to follow the government directives and completely halt their production. The immediate repercussion was that their labour force was instantaneously left without jobs and hence moved back to their native rural regions (India) or to their home countries (Thailand). With the gradual easing of lockdowns, these firms reopened their operations at a reduced scale:

While the government has allowed businesses to resume under strict guidelines, companies are not rushing to achieve pre-COVID-19 run-rates and instead are calibrating staff strength as they are aware that any incident of infection can prove costly. Companies said employee safety and workplace hygiene is the prime focus (Economic Times, 2020).

In some industries, risk was spread due to the heterogeneity of the customer base and of geographical operations:

The granularity in our customer base across many individual house builders and small buyers ensures revenue spread across a large base and insulates us from risk of dependence on few large accounts. Also, a large portion of our capacities are now in eastern belt of the country where we expect high growth potential (Ramco Cements Ltd, AR 2019-2020).

Strategic changes. Firms implemented two key strategies. First, they mobilized political and regulatory support through advocacy, where industry leaders attempted to convince the government why a gradual resumption of production, while ensuring preventive measures to curtail the spread of C-19, was important (Bhaskar, 2020). With the WHO suggesting that the pandemic was here to stay for more than a year, the firms in this cluster realized that they had to obtain permissions to resume operations to remain relevant and avoid the risk of bankruptcy. The second strategy related to devising plans for factory automation to move towards reduced labour

dependence going forward. Our data suggest that the adoption of Industry 4.0 and associated technologies was likely to occur much faster than originally anticipated on account of the pandemic:

We have already implemented Robotic Process Automation (RPAs) in several of our business processes. ...We have also launched an employee Mobile App to give a seamless experience to our employees and increase engagement levels further. ...We are in the process of implementing Digital Supply Chain solutions that leverage IoT, AI and ML. (Godfrey Philips India Ltd, AR 2019-2020).

Some firms in this cluster also adopted digital channels of distribution and sales. One example is the firm PC Jeweller Limited, a medium sized firm engaged in the business of manufacturing, sale and trading of gold, diamond and silver jewellery:

There is a huge opportunity in the online sale of jewellery. Although, this channel generally caters to low ticket items only, but as a consequence of disruptions caused by the ongoing pandemic COVID-19 scare, this channel is expected to gain traction and gain popularity with the customers for even higher category jewellery (PC Jeweller Ltd, AR 2019-2020).

In industries such as leather and leather products, which typically depend on discretionary spending, the online medium was an unexpected opportunity to reach out to a different group of customers, providing them:

Our revamped brand identity has inspired new customers. These include millennials, whom we have been targeting as part of our transformation story. Millennials are avid shoppers, possess relatively higher disposable incomes, backed by a fashion-centric mindset... The company ...is expanding its e-commerce footprint by ramping up its presence in online marketplaces allowing delivery in over 1,300 cities, rolling out home delivery from across 900+ stores and giving customers option to shop from the comfort of their homes via WhatsApp Chat with their neighbourhood stores (Bata India Ltd, AR 2019-2020).

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In the alcoholic beverage industries, firms also began to look for alternative channels:

....challenges in distribution and selling especially of alcoholic beverage products... modified selling strategies and more direct-to-consumer options for volume recovery. These cover physical stores focusing more on off-premise channels, telesales and online selling supported by stronger delivery operations and strategic online partnerships to ensure availability in relevant channels (San Miguel Food and Beverage Inc. AR 2020).

Recovery/sustenance mechanisms. As restrictions were eased, firms in this cluster sought to recoup lost days of work by ramping up production. In the Philippines, Eagle Cement (press release, 20 July 2020) announced:

In line with the government's call to prioritize critical infrastructure projects that will help restart the economy, we have ramped up our production since we resumed commercial operations....fully prepared to supply the steadily increasing demand for cement as more and more construction projects ...open up.

For the majority of firms, recovery required careful management of finances and the mobilization of lost labour. Financial management involved financial restructuring to match the new realities in liquidity and cash flows, implementation of strict cost control measures and a review of capital expenditure plans while monetizing certain firm assets.

The capex plans are currently being reviewed, in the context of the current economic environment (Grasim Industries Ltd, AR 2019-2020).

Some approaches included a request for tax deferrals, seeking other incentives from the government:

In regard to dues to Governments, the Company has sought extension on account of COVID-19 lockdown in relation to the below mentioned sales tax deferral dues which has since been paid (India Cements Ltd, AR 2019-2020).

We negotiated with our key banks to increase our debt facility to R7,75 billion to provide sufficient liquidity. The South African Revenue Service extended our excise duty payment terms by 90 days (Distell, Annual Report 2020).

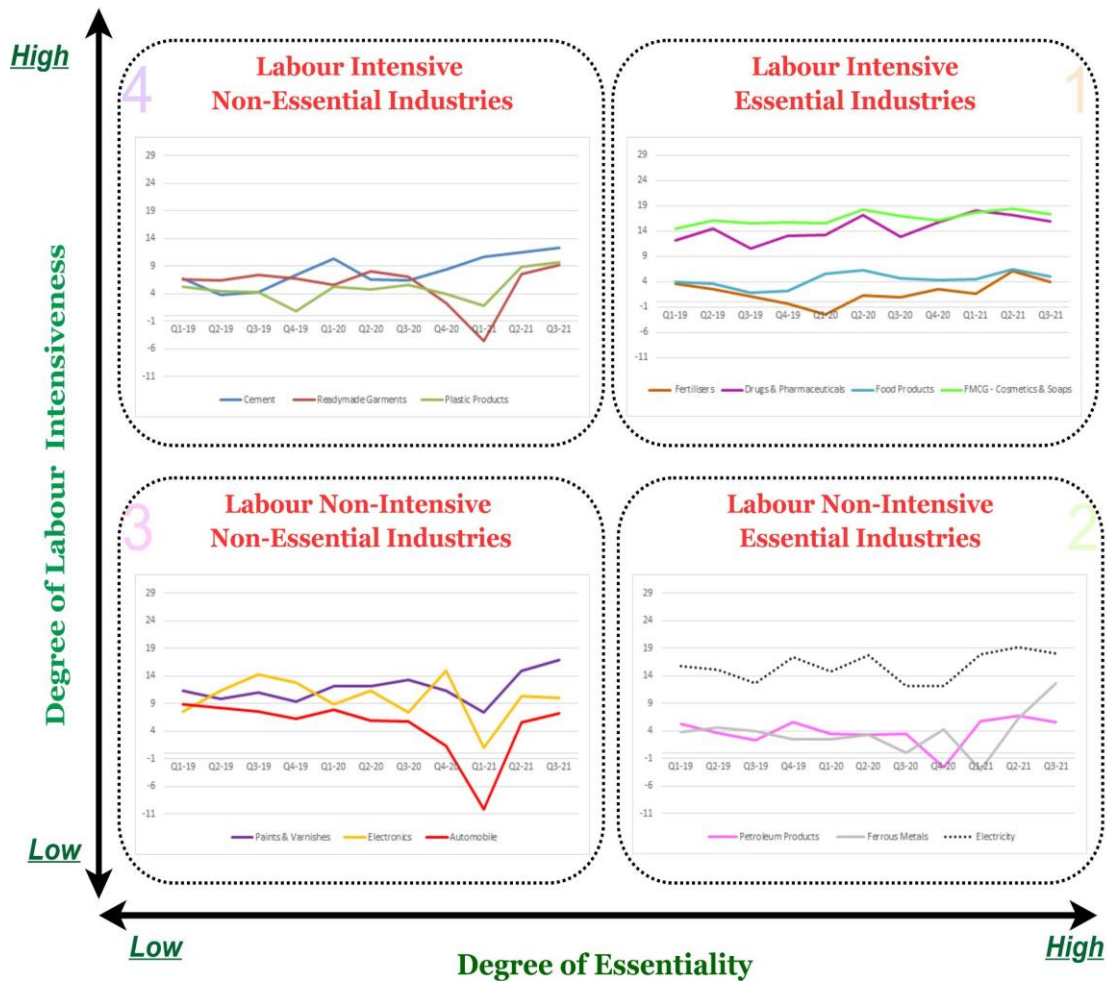
5.3 Outcomes

While the pandemic was ubiquitous, its impact was hardly uniform across industries. As demonstrated above, essentiality and labour dependence determined how the industries responded to C-19. Accordingly, the industries' differed on outcome metrics such as business continuity, employment and profitability. Business continuity was *relatively* free of disruptions for industries in quadrants 1 and 2 (Figure 2) due to the alignment between their outputs and people's immediate needs. Most industries in quadrants 3 and 4 faced at least some periods of disruption in their normal operations. National lockdowns across developing countries in response to C-19 wiped away month(s) of productivity in many industries involved in the manufacturing of *non-essential* products.

Although C-19 had a negative impact on employment for all clusters, its impact was again more adverse for industries that produced non-essential products and services. The enforced lockdowns for a considerable period meant that the firms in clusters 3 and 4 had to shut down their operations, some for more than two to three months. While it may be intuitive to assume that the lost jobs would be immediately reclaimed once operations were gradually resumed, the fact that much of the labour force was migratory in nature meant that a remobilization of workers was a not a straightforward process. The limited support for workers, the thinning of social buffers, coupled with the individualization of risk mitigation and the apathy of the institutional apparatus in devising arrangements for the workers has significantly amplified the labour crisis.

At the firm level, the impact of C-19 on firm profitability has also been mixed. Figure 3 presents a comparative summary of profitability (measured by net margin, i.e. profit after tax as a percentage of total income) of some of the industries across the four clusters for India. Barring some industries in cluster 1, most industries faced a difficult period in the last quarter of 2019–2020 and the first two quarters of 2020–2021 (the financial year in India is April to March). The recovery process was quick and positive for the industries in clusters 1 and 2. However, it was slow and gradual for those in clusters 3 and 4. For instance, as shown in Figure 3, profitability increased towards the latter half of 2020 for the FMCG industry (relatively more essential), while it was still recovering in the readymade garments industry (relatively less essential).

Figure 3: Comparative analysis of profitability of industries during C-19



Source: Authors' elaboration based on CMIE Industry database.

6. Responses by MSME firms

Micro, small and medium enterprises (MSMEs) play a pivotal role in the national economies of many countries around the world, especially in emerging markets. In Brazil, MSMEs account for 11.5 million firms, employ close to 56 million people and account for around 27 per cent of the nation's GDP (Veiga and McCahery, 2019), while in India, MSMEs account for 30.27 per cent of GDP, employ 110 million people, and contribute close to 50 per cent of exports (GoI, 2021; PIB, 2019). In the ASEAN countries, MSMEs represent over 90 per cent of firms and between 60 per cent and 80 per cent of employment (Marsan and Sabrina, 2020).

Their critical role in the larger domestic value chains in these countries and in the global value chains can hardly be denied, given their key contribution as component manufacturers, distributed assemblers creating decentralized supply as well as distribution networks. Disruptions in the chain were imminent given the severe restrictions imposed by C-19, especially in the non-essential manufacturing sector, which in turn affected the larger firms which were dependent on MSMEs for their components supply. Some industries such as the automotive industry in many emerging markets have up to three-tiers of suppliers. A discontinuity in one of the layers disrupts the entire chain. In the ASEAN MSME environment, a variety of responses were observed depending on the industry within which the firms operate, the employees' skill level, degree of internationalization, innovativeness and technology maturity (Marsan and Sabrina, 2020).

For most business-to-business MSMEs, the inability to pay workers' salaries, locked manufacturing setups, dead stock, zero sales, unfulfilled payments coupled with rapidly increasing expenses were the disillusioning impacts of C-19.

The first problem ...was ...MSMEs' inability to give salaries to their employees. They were somehow able to pay for March but since April, ...due to the lockdown, paying salaries to employees is a serious concern. The second problem ...was ...the fixed electricity charges to be paid by businesses every month over and above the energy charges. MSMEs' factories are shut under lockdown but they are forced to pay the amount. In some industries, the amount is crippling. Third concern ...was monthly bank loan EMIs. The three-month moratorium is not of much help as it simply extends the period. In fact, it has increased concern for MSMEs (Financial Express, April 9, 2020).

In addition to these, direct-to-consumer MSMEs producing non-essential items, experienced a severe drop in consumption, and the curtailment of discretionary spending led not only to a liquidity crunch but also to missed sales opportunities.

Governments in many emerging markets came forward with a slew of measures to support the recovery of MSMEs and mitigate further disruptions to MSMEs' economic activities. The Government of India, for instance, offered collateral-free automatic loans to MSMEs to meet operational liabilities, buy raw material, restart their business. To ease the financial burden of MSMEs, the Central Reserve Bank of India (RBI) extended the moratorium on the repayment of loans (PIB, 2020b). The Government of Indonesia implemented reduced taxation, reduced electricity costs for MSMEs, loan restructuring and interest rate subsidies and facilitated working capital loans (GoId, 2020).

However, with hardly any demand, pending loans, difficulties in access to raw materials and unpaid salaries, one MSME entrepreneur, the owner of a diversified business in a Tier 2 city in India, acknowledged that:

the government's fiscal stimulus packages through loan guarantees and loan payment moratoriums are grossly insufficient. While they can help me tide over the crisis temporarily, they may actually make my situation worse since there is hardly any demand generation. If people don't consume my services, how will I repay the loan anyway.

Unlike large publicly listed companies with a comfortable liquidity position and relatively easier access to capital, MSMEs faced severe working capital constraints. In Brazil,

...according to SEBRAE's data, 89% of MSMEs showed an average fall of 60% on revenues, which is even more alarming considering that according to our estimates a large share of MSMEs - between 39%- 56%- are likely to have less than 21 days of cash reserves (Moreno et al., 2020).

In addition, the lack of demand, especially due to reduced discretionary consumption, led MSMEs to face severe asset stress, thereby resulting in increased non-performing assets, particularly equipment, but also unutilized inventory, thus further reducing the value of their collateral assets. With business revival already being an uphill battle, even after the resumption of production once the lockdown was lifted, MSMEs had difficulties repaying loans, resulting in a credit rating slide, which in turn led to problems accessing any subsequent bank loans by already credit-starved MSMEs (Ramanathan, 2020).

However, some MSMEs, especially those in the essential industries categories, such as food, were more optimistic:

how existing resources should be utilised in a better manner to bring in revenues at this time. "We have to see what works. We have to pay salaries. Only those will hold fort who will adapt and be resilient" (Dewan, 2020).

Many large firms extended a helping hand to their MSME suppliers by extending lines of credit, guaranteeing bank finances, sharing best practices to ensure the safety of employees, redesigning processes for contactless handovers of physical products and providing digital and IT infrastructure to facilitate coordination. Gojek, originally a ride-hailing service in Indonesia

which later became an on-demand service platform, took it upon itself to help MSMEs accelerate their digital transformation:

It is very important for conventional MSMEs to transform into digital businesses so that they can adapt according to changes in consumer behavior, who are now using more digital platforms to meet all their needs...Going digital is not easy if there is only one part of the value chain that is digitalized. That is why we offer end-to-end solutions (Gojek CEO in The Jakarta Post, August 14, 2020).

The opportunities presented by digital technologies to support some of the activities of the business need to be further capitalized on. Tastybite, a medium-scale processed and pre-prepared food manufacturer stated in its annual report (2019–20):

We can already see several innovations in the delivery side of the business with contactless delivery becoming a norm. Online reservations, QR - code menu... no-sharing meal (plates), reduced waiting time and minimum human contact are some possible innovations that we will start seeing on the Eat-In side of the business as well. As brands start simplifying their menu and processes they need to standardize their supply chain and move from in-house preparation to outsourcing of intermediate and / or finished prepared foods.

A vast majority of MSMEs continue to be labour dependent, resource starved and are lagging behind in their adoption and adaption of digital ways of working. The significance of digitalization and the adoption of automation in MSMEs crystallized when lockdown was imposed in a vast majority of emerging markets and the ensuing challenges in mobilizing the migrant workforce, which represents the majority of their employees.

The adoption of information technology and digital platforms amongst MSMEs has mainly occurred in distribution, marketing and sales, such as in the food processing and grocery retail businesses where many large e-commerce grocery retailers who faced far greater demand than supply began partnering with local mom-and-pop, corner and modern trade retail shops to fulfil orders. This was an unexpected opportunity for the shops given that they otherwise would have had difficulties garnering resources to digitalize and utilize the workforce while providing them increased working capital and greater access to customers. This enabled ‘hyperlocal commerce’ through agile deliveries of essential goods to the doorsteps of consumers, reducing time to procure essential goods but also minimizing the risks of community transmission (Garg, 2020). A senior management executive of an e-commerce company reported:

When we tapped local wholesalers, they were happy to sell online (also) because payments are quicker via ecomm than through traditional retail channels where extending credit is often the norm (Shrivastava, 2020)

While MSMEs and governments in various emerging markets responded differently, there were some common responses that distinguished them from other more developed market environments. Financial impetus offered by governments in these countries, such as collateral-free automatic loans, reduced taxation, lowered electricity costs, loan restructuring and interest rate subsidies to meet operational liabilities/ working capital issues, were measures to support MSMEs in their recovery efforts. Many MSMEs also provided personalized responses to individual employee needs given their small number of employees as well as their high dependency on employees for quick recovery post-pandemic.

7. Doing more with less in emerging markets

The speed and severity of the pandemic afforded little luxury to countries to respond through products and processes that can address the needs of people and firms – not only in terms of healthcare provision, but also in a variety of everyday needs such as food, education, entertainment and even in mundane routine tasks such as maintaining consumer durables at home. Innovative solutions have come forth from many quarters to address these needs. Some of these innovations have been able to do more with less in creative and resourceful ways amidst the many resource constraints firms face. Frugal innovations, as they are often called, “encompass (re)designing products, services, systems, and business models in order to reduce complexity and total lifecycle costs, and enhance functionality, while providing high user value and affordable solutions for relatively low-income customers” (Leliveld and Knorringa, 2018, p. 1). In emerging market situations which are characterized by resource scarcity, weaker institutional intermediaries, and therefore quite frequently have a higher tolerance for uncertainties (Hoskisson et al., 2000), frugality is deeply entrenched in the mindset of both providers and customers. Frugal innovations are therefore inherent in the fabric of organizations in emerging markets owing to such an environment of constraints. A variety of such frugal innovations have arisen during the pandemic, especially in emerging markets, where the focus is not only on frugality, but also on flexibility in the process of design and manufacturing, along with the objective of inclusiveness (Prabhu, 2020). Some firms have also used digital technologies and automation opportunities to innovatively use their available resources more efficiently. We present some such examples from our analysis below.

Repurposing resources to meet emergent needs: The pandemic pushed firms to prioritize their resources to critical areas to satiate the immediate needs of their environment. It involved leveraging idling capacities of assets, channelling existing equipment for newer requirements and retrofitting products to create newer possibilities. For instance, a two-wheeler automobile firm designed a motorcycle that could be leveraged as a last mile ambulance to bring patients in from remote areas:

Hero MotoCorp has handed over two unique first-responder vehicles to community health centres in Alwar. The vehicles supplied to the health centres in Neemrana and Mundawar are based on the Hero Xtreme 200R motorcycle, complete with a stretcher, foldable hood, essential medical aid such as detachable first-aid kit, oxygen cylinder, fire extinguisher and safety features (Express Drives Desk, Financial Express, 16 July 2020).

In another instance, ITC ‘repurposed a perfume plant to ramp up the production of Savlon sanitizer production’ (Tandon, 2020), a peripheral product in the pre-COVID world. Likewise, Harkness Screens, a theatre screen provider, repurposed the equipment in its factories to manufacture screen barriers and medical curtains:

After much deliberations, it has started manufacturing medical curtains, tablecloth for restaurants and screen barriers which can be used between desks in offices, between seats in theatres or between two tables in restaurants—all from the same PVC material used in making cinema screens (Tandon, 2020).

Similarly, many railway companies, including the Indian and French railways, adapted their train cars converting them into mobile isolation wards, especially since train services were halted and these carriages were not being used by commuters (Prabhu, 2020). By repurposing and reusing existing resources, railways were able to address an urgent need for isolation spaces for COVID patients, while at the same time identifying complementary solutions to problems such as waste disposal, temperature control and coach redesign.

Innovative, agile firms, especially healthcare start-ups, managed to create equipment designs such as for ventilators, which could then be manufactured by repurposing some of the existing assembly lines in factories. Nocca Robotics, a firm incubated in an academic setting, comprehensively mentored by practitioners in the device equipment industry, created a turbine-based ventilator which renders compressed medical air unnecessary and, with other features, is tuned to the rural needs of emerging markets such as an in-built battery (Basu, 2020).

Product innovations to meet a surge in demand: A significant share of demand for medical technology equipment in emerging markets is met through imports. For example, in India, 80 per cent of such equipment, which includes electrocardiograph machines, ortho- and cardio implants, are imported. In many cases, easily *indigenizable* medical consumables, such as medicated cotton wool or diagnostic reagents, are being imported from China (Porecha, 2020) due to cost advantages. Yet during the C-19 situation, when many governments banned the export of such equipment, countries including India faced tremendous challenges in care provision for patients. Given the lower disposable income of the population in emerging markets, design innovations were also made in the development of medical supplies to make them more accessible:

It (PPE) incorporates superior quality breathable fabric to make the PPE suit while its design innovation eliminates the need of costly taping and sealing of the seam which is otherwise needed in other PPEs available in the market. The fabric, suit and seam have been found to meet the synthetic blood penetration resistance criteria comfortably (PIB, 2020a).

Innovations were also made to reduce the burden of production of PPE and other gear:

It (the firm) has developed a unique multi-focal UV disinfection chamber (called CoronaOven) that can sanitise any surface of all pathogens in only 10 minutes, thus permitting hospitals to re-use masks, gloves and other PPE (Chowdhary, 2020).

Other firms that had invested in expensive equipment for additive manufacturing found a purposive application of such technology during the pandemic, given the speed with which material products can be made available to those in urgent need. Additive manufacturing, such as through 3-D printing, makes it possible to produce entire assemblies in one piece. For example, companies that had access to 3-D printers stepped in to make test swabs, ventilator valves, splitters and even PPE to ease the pressure on healthcare firms.

Process innovations to stay afloat: The pandemic times pose resource challenges for different aspects of production. Specifically, restrictions on labour presence on the shop floor, labour shortages and input disruptions meant that firms could not operate as usual. Keeping the business afloat under these circumstances required firms to alter their business processes to continue producing goods with the limited resources available to them. In the construction sector in the Philippines, for instance, firms moved towards safer and faster building solutions such as the use of ‘one-day concrete rather than the regular one that takes 14 days to mix, place, cure and attain the desired strength’ (Abad, 2020).

Some firms ventured into modifying their shop floor processes to minimize social contact and restrict the spread of infection while continuing to ensure business continuity. One such frugal process innovation was the use of “task pods” drawn from the erstwhile idea of cellular manufacturing where self-contained units functioned as a combination of assembly line and consolidation of a subset of the main process used to make a single output.

Firms also adopted social distancing technologies, created provisions for remote monitoring of operations and devised contactless operations wherever possible to improve the safety of their employees:

The Siemens engineers, sitting in their homes, looked at the digital imprint of the machine which was captured real time through a 3D-glass worn by a person at the site. Directions were given remotely, for example which wire needs to be connected where, just as the engineer would have done sitting inside the machine at the site (Mathew, 2020).

Similarly,

Secureye provides a face recognition system for attendance and facial recognition-based access control. Ramco's Innovation Lab has developed a facial recognition-based time and attendance system embedded with temperature recording and IoT (Ahaskar and Mathur, 2020).

In addition, firms also deployed edge-to-office solutions to enable employees to work from home under conditions close to those at the office. This included helping employees set up workstations at home for those who had the necessary facilities:

During the mandatory remote work environment, our goal was to ensure every Microsoft employee has the tools, resources, and solutions to be as creative, productive and secure as possible, working from any location and on any device. ...For a comfortable work environment, we extended our policies to enable employees to enhance home bandwidth connections and procure the right equipment, including ergonomic furniture (Mathur, 2020).

Finally, process innovation changes also incorporated just-in-case approaches to supply chain risk management to address the vulnerabilities of suppliers by identifying substitute players (Sneader and Singhal, 2020).

Innovations in sales and distribution of services: Increasing demand for contactless delivery and distribution of products and services during the lockdown also gave rise to many innovations. Firms such as large manufacturers of consumer products re-deployed their sales force and service networks to ensure “direct-to-home collaborative distribution solutions” by partnering with existing direct delivery networks such as Dominos, Swiggy, Zomato, Dunzo, Amway, etc. (ITC Ltd, AR 2019-20), or establishing stores and services on wheels such as facilitating maintenance service for motorcycles at customers’ doorstep (Eicher Motors Ltd, AR 2019-20).

In addition, firms also enabled or were working towards enabling customers to trace the products end-to-end to be assured of any health- and hygiene-related aspects:

Digitalization is changing the role of packaging. The Connected Package allows food and beverage producers to turn their packages into full-scale data carriers offering increased traceability, and value for each stakeholder in the entire value chain. ... Connected packaging opens up a world of new possibilities to engage consumers on food safety (Goldschmidt, 2021).

Wherever possible, firms also attempted to provide a secure environment for in-store purchases. Such purchases included requirements for purchase appointments to avoid crowding, contactless purchase possibilities and chat bots acting as digital sales managers (Goldschmidt, 2021; Sathya Ramaganapathy, 2021).

Co-creation to enhance value: Crisis-led innovations in emerging market contexts often tend to be muted by the many constraints imposed by the environment. The normal process of procurement of raw materials, the production and supply of key items can hardly be followed to match the unprecedented volume and acceleration of demand, and many firms are seeking innovative ways to utilize the opportunities presented by the crisis. Some of these opportunities have been driven by the collaborative construction of value by firms along with their customers through the joint creation of products and services.

Value Co-Creation (VCC) enables the tailoring of products to suit customers’ requirements as opposed to the firm producing goods independently for consumption by the customer (Ranjan and Read, 2016). Recent research has moved away from the dyadic conceptualization of VCC, which only involves the producer-consumer relationship, towards a systemic view which integrates a network of actors including suppliers, firms, distributors, consumers and others that come together to jointly create value. C-19 has demonstrated that firms cannot thrive in silos but exist

within a complex mesh of actors in the supply chain, who may or may not be directly visible to the focal firm. As discussed above, a problem an invisible third tier supplier faces may have a damaging effect on the last mile distributor. Firms realized that their sustenance depends heavily on the health of nearly every node in the supply chain. The pooling of resources and the building of collaborative competencies allowed firms to draw upon the strength of different nodes while balancing any weaknesses the individual nodes may have. This led to the emergence of solution networks, where the focal firm enabled VCC between the different nodes in the supply chain. This is especially significant in an emerging market context where many nodes may have been previously inaccessible to the focal firm due to the informal nature of contracts between the actors.

Motherson has also worked with customers to facilitate the manufacturing of medical supplies such as ventilators, supplying spray guns for sanitising and providing oil-free compressors. Many of our facilities globally have produced protective visors for doctors, firefighters, nurses, and medical researchers in response to local surges in demand for this vital equipment (Motherson Sumi Systems Ltd, AR 2019-2020)

First, such solution networks give the focal firm greater control over its supply chain and it can thereby receive inputs or distribute its products more reliably. Second, in case of essential products with perishable demand, the network provides for better coordination to meet demand with improved timeliness. Third, solution networks enable the creation of supporting structures for marginal actors such as MSMEs, which required financial, technological and other forms of support to ride out the pandemic.

While the Company requires the suppliers to perform well on the quality, cost and delivery metrics, suppliers had concerns about the ways and means of support that would come from the Company in terms of constant communication. Based on the supplier requirements, a web portal ...is run by the Company and actively used for sharing Quality & Delivery performance and payment status to supplier. This is a live information sharing portal enabling all stakeholders to have constant communication with suppliers (TVS Motors Ltd, AR 2019-2020).

Joint ideation also enabled the enactment of product/process innovations that met consumers' emerging needs. Maker's Asylum played the role of the focal firm in bringing together design and ideas for face shields that could be assembled at scale and speed (Corsini et al., 2021)

It's not about the same design. Every lab is making multiple designs. What we're trying to do is just combine the initiative of all of the labs, to go out with one voice, the fact that all these smaller hubs across the country can take whichever design, whatever that works...We're able to serve, give them out, and have an impact as a collective then. That was important (Vaibhav Chhabra, co-founder, Maker's Asylum).

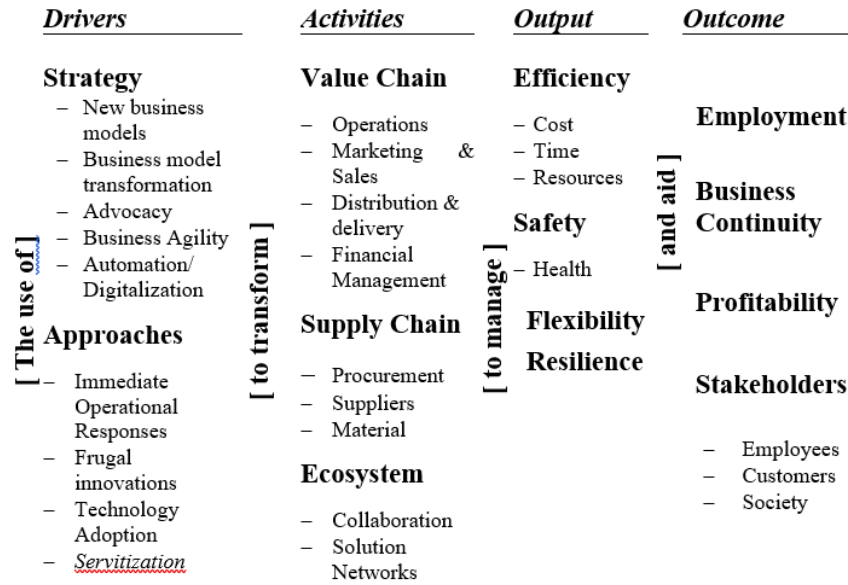
Such convergence innovation can support firms in implementing effective strategies for value co-creation with agility (Lee and Trimi, 2021) while meeting sudden demands.

8. Salient themes

The discussions in the sections above unearth the different dimensions involved in addressing the impact of C-19 on industrial production. Without intending to reduce the complexity associated with the impacts of C-19, but to serve more as a template to help determine how firms have coped and can cope with such crises, we re-organize these dimensions in the ontological framework introduced in Section 3 (Figure 4). Table 4 in the Appendix presents a detailed description of some of the different elements in our ontological framework.

Our attention is drawn to a set of key issues on two sides of the spectrum, namely (i) the fundamental challenges firms faced due to C-19, and (ii), the diversity in their responses to these challenges based on the nature of the industry they operated in and their degree of labour intensity. While we observe heterogeneity in their responses, few consistent themes in terms of firm capabilities emerged. To shed some light on the abstraction and present the responses in thematic groups, we use *metaphors* of different types of channels that arise in the *flow of rivers*. ‘The essence of a metaphor is understanding and experiencing one kind of thing in terms of another’ (Lakoff and Johnson, 2003). Metaphors in qualitative research are “pattern-making” and “decentring” devices that help condense data while being cognizant of the richness and complexity that the metaphor can bring forth to reflect the theoretical possibilities (Miles et al., 2014, p. 281). We acknowledge the risk of oversimplifying the phenomena and depicting the complex responses by firms to C-19 in singular metaphors, but a deeper scrutiny reveals the value of such interpretations in well-serving the underlying data, rendering the use of metaphors as “purposive and explicit for understanding the uncommon experience” (Manhas and Oberle, 2015, p. 46) in the C-19 context. We therefore view our use of the river channelling metaphor as a mechanism to connect our in-depth data analysis presented in Sections 5, 6 and 7 to our overarching theory represented in the ontological framework.

Figure 4: Ontological framework on coping with the impact of C-19



Source: Authors' elaboration

8.1 Meandering

Amongst the various firm-level responses to the C-19 crisis, we observe that some firms sought immediate operational adjustments and adopted a 'wait and see' approach. In our ontological framework, instances such as:

'The use of Immediate Operational Responses to transform Operations to manage Cost Efficiencies and aid Business Continuity'

represent such a response. These firms have opted to *meander* through the situation and 'go with the flow' as though things were 'normal' and the transition merely a 'mild twist' with the belief that "normalcy" will soon return. Such responses seem more common among firms that were able to tide over the crisis given their comfortable liquidity position or low to medium operational costs. Lest we forget, most countries chose to re-open their economy and allow industries to resume operations within two to three months from the outbreak of the pandemic out of fear of massive repercussions for the economy. It is questionable whether these firms could have continued to meander had the lockdowns been longer than they were or if subsequent waves of rising COVID infections had resulted in further restrictions to economic activities.

8.2 Braided

The importance of agility and dynamic capability in such crisis situations cannot be emphasized enough. This is reflected in the actions of many firms that were able to repurpose their production and assembling capabilities or were able to garner their human resources to engage them in purposeful, situation-relevant activities. These firms, it appears, were able to tide over the crisis and sustain their business, albeit at far lower scale and profitability than in normal times. Dynamic capabilities allow firms to ‘sense’ opportunities and ‘seize’ them to refine their business model and commit resources and ‘transform’ their structure, processes and culture (Teece, 2018) in a way so they can use the firm’s resources to address and respond to changes in the environment and, where possible, shape the external environment. One key aspect of developing dynamic capabilities is to refine and redefine the business model and its operational processes over time, sometimes by replacing and recombining the different elements, in many ways mirroring the ephemeral channels that continually split and join as a river flows by. In our ontological framework, instances such as the following would fit the ‘braided’ metaphor:

‘The use of Business Agility strategies to transform Value Chain to manage Flexibility and aid the Society.’

8.3 Rapids

Most firms acknowledged the imperative to shift to at least partial use of factory automation to minimize the risks of such future disruptions to operations. A cursory look at recent case studies of adoption of low-cost automation technologies shows that MSMEs are showing increasing interest in such technologies. Economic data also reveal a gradual decrease in labour intensity in some of the erstwhile labour-intensive industries. This may indicate an imperceptible shift towards factory automation in some industries.

In our ontological framework, one such instance could be:

‘The use of Digitalisation to transform Marketing & Sales activities to manage Resilience and aid Profitability.’

Coupled with an accelerated shift towards digitalization in activities such as marketing through social media, the adoption of e-commerce for sales and distribution, and more recently accounting apps that simplify goods and service tax-compliant accounting processes, firms may encounter opportunities to gear up towards ‘rapids’ and ‘torrents’ that generate demand-push incentives to build technology capabilities and increase both workers’ and managers’ technological knowledge.

8.4 Reserve sourcing

While large firms, which were financially liquid, had reserve funds to tap into during the pandemic to meet operational costs, MSMEs experienced significant liquidity stress. Many firms had little choice but to discontinue their operations and temporarily shut down their functional factories, and they therefore sought to manage their finances better by reorganizing their investments. In some countries, governments and central banks provided moratoriums on corporate loans or additional lines of credit to ensure these businesses' survival. One example of such reserve sourcing in our ontological framework is indicated by:

'The use of Immediate Operational Responses to transform Financial Management activities to manage Resources efficiently and aid Business Continuity.'

Unlike the earlier categories of responses—*meandering*, *braided* and *rapids*, the *reserve sourcing* option requires contingency planning and financial capabilities to cushion such risks. To better prepare for such reserve sourcing, firms may wish to establish rolling contingency funds to help them tide over such crisis situations without facing the grave possibility of complete closure. MSMEs may also have to invest in low-cost automation to address skilled labour issues. Low-cost insurance to cover such situations can also help overcome business losses. Better capabilities to address the need for structured financial planning aware of the risks imposed by similar situations will now be increasingly seen as a must-have skill set amongst entrepreneurs and business managers alike.

9. Conclusion and implications

The C-19 pandemic, while exposing the fault lines in our economic environments, has also distinctly evidenced how local economies and supply chains are more likely to be resilient to such shocks and can effectively provision for society's needs, especially during times of crisis. With a clear spike in demand for essential products, including medical equipment and supplies and everyday use consumables, among others, our analysis revealed how firms could prioritize resources and ramp up their production. By identifying the cluster they belong to and **taking heed of the norms set by the government**, firms may be able to better respond to opportunities while balancing their resources accordingly. They need to identify strategic opportunities to diversify into essential product categories as determined by the government or find mechanisms to cushion themselves against possible liquidity crises. Such diversification will not only help sustain the firm during prolonged crisis periods, but also accelerate their recovery post-pandemic.

Second, C-19-like crises cause resource shortages that are all-pervasive. **Keeping afloat under resource scarcity** requires firms to make decisions on critical functions and divert already-depleted resources to those thrust areas only. In addition, they might have to introduce process transformations to function in the face of emergent realities. Such process changes may include automating certain functions to work in a situation of reduced labour, creating provisions for remote working and monitoring, and innovating to speed up workflows to minimize contact where possible.

Third, focal organizations in the supply chain must strive to **support their suppliers and distributors** during periods of lockdown or subdued demand. While temporary periods of lull may be manageable for large organizations with deep pockets, MSMEs that support these multinational corporations (MNCs) as service providers might face working capital issues that may cause them to break down. In such cases, aside from stimulus packages issued by the government, MNCs could also provide support in terms of extending credit, technology know-how for process transformations and acknowledging their potential role in case of business model changes.

Organizations can also effect **structural changes to address crisis situations** within and outside their boundaries. Modularity in the design of operations on the shop floor, where different modules are loosely coupled or even decoupled can ensure that disruptions within one module do not heavily impact the others. Thereby, issues in any of the clusters can be diagnosed and resolved quickly, leading to faster recovery turnarounds. Building solution networks that leverage the complementary competencies of different organizations within the network can infuse redundancy within the design, and thus help the network function and deliver outputs despite temporary setbacks.

Building resilience capabilities while upskilling employees, introducing safety procedures and moving towards a customer-centric business called for a **shift in the metrics used to monitor the business**. The popular metrics used to measure performance, i.e. key performance indicators (KPIs), required tweaking to build resilience into the fabric of the organization. This also resulted in dynamic corrective action possibilities for firms as they sailed through the uncertainties of the pandemic.

Finally, while businesses navigate the present, they should also be able to **perceive and shape the future**. While the pandemic itself may be a transient phenomenon that may last for a few years, it could cause long-term changes in employee and consumer behaviour. For instance, the

automobile industry has forecast a long-term shift in preferences for personal mobility vehicles. Likewise, several firms have predicted a larger share of time that employees might spend working from home (for those jobs where ‘work from home’ options are possible). Firms must hence be able to ‘sense’ the pulse of their environment and start working towards strategic changes that will enable them to take advantage of such opportunities.

9.1 Implications for national government policies

The images of migrant subsistence labour walking back thousands of kilometres to reach home, due to an abrupt and unplanned lockdown caused by C-19 became one of the most defining and painful moments of the Government of India’s C-19 response. Many people perished and most endured unexplainable hardships during their journey. These people had migrated from remote rural villages to the cities in search of jobs in different industries of the manufacturing sector, including construction, automobiles and petrochemicals, among others. The sudden imposition of the lockdown rendered them jobless instantaneously. With little disposable income and no income in the foreseeable future, these workers were left to fend for themselves despite playing a big role in the development of the industries and thus the nation as a whole. The recent second C-19 wave in India created a déjà vu moment, with workers again migrating back to their villages (i.e. those who had returned to the cities following the easing of lockdown measures), albeit this time in trains and buses. Such inhumane experiences faced by workers point to a strong need to improve the **treatment of migrant labour during such nationwide crises**. A policy framework is needed to ensure social security measures are in place during periods of employment coupled with proper housing facilities⁷ in order for them to continue leading a productive life. Acknowledging the labour force’s contribution and given the role of MSMEs in the economies of emerging markets, it may also be prudent for nations to **revisit social contracts**, since a “pattern of de-mutualisation of social contracts” has been observed over the last few decades, giving rise to “shifting of responsibility for economic outcomes over to individuals” (Tacke et al., 2020). The pandemic has revealed underlying vulnerabilities in current approaches and presents an opportunity to revisit social contracts, rebalancing them towards a more prominent role for government and private institutions targeted at greater mutualization.

⁷ Most migrant workers live in rented homes in the cities. During the pandemic when they lost their jobs, the inability to pay rent was another reason that forced them to leave.

Further, while industries classified as ‘essential’ marginally varied between countries, some thrust areas such as pharmaceuticals, medical equipment and daily use consumer goods were universally designated as ‘essential’. National governments play an important role in **managing essential industries during lockdowns**. While the expectation that these industries should be able to cater to surges in demand is justified, governments need to support them financially to exponentially ramp up capacities. For instance, while the Serum Institute in India is the largest producer of vaccines in the world, it too requires stimulus to expand its production capacity to be able to cater to the urgent demand for vaccines. Likewise, the government also needs to keep its communication consistent in a dynamic situation such as the pandemic so that firms operating in non-essential industries can plan their operations and finances accordingly.

Finally, maintaining the balance between the health of the industry and of the workers is extremely tricky, and governments will have to **draft plans to deal with such situations with greater tact**. For instance, as opposed to large-scale blanket lockdowns, hotspots where the pandemic is surging need to be identified and contained, while the rest of the country remains on vigil. Greater planning and communication may go a long way in supporting industries, while safeguarding the health of the masses. There can be little excuse for the absence of structured approaches over organic ad-hocism which seems to have dominated countries’ response to the pandemic.

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Appendix

Table 1: List of annual reports of firms included in the analysis

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
PRIMARY COUNTRY OF OPERATIONS: INDIA					
1	Ajantha Pharma Ltd	Pharmaceuticals	Drugs & pharma	300 million	1
2	Asian Paints Ltd	Building materials	Paints	2.9 billion	3
3	Bajaj Auto Ltd.	Automobiles & ancillaries	Motorcycles	4.2 billion	3
4	Bata India Ltd	Leather & related footwear products	Footwear	420 million	4
5	Eicher Motors Ltd	Automobiles & ancillaries	Trucks, buses, powertrains	1.3 billion	3
6	EID Parry (India) Ltd.	Food products	Food products like sugar, jaggery	2.2 billion	1
7	Eveready Industries India Ltd	Lighting and electricity solutions / dry cell	Batteries, lights	169 million	1 / 4
8	Godfrey Philips India Ltd.	Consumer goods	Tobacco, confectionary	398 million	1

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
9	Grasim Industries Ltd.	Diversified	Chemicals and synthetic fibres	11 billion	2
10	Hero Motorcorp Ltd	Automotive	Auto - 2 & 3 wheelers	4.2 billion	3
11	Hindalco Industries Ltd	Non-ferrous metals	Aluminium	17 billion	4
12	Hindustan Unilever Ltd	FMCG	Personal care	5.7 billion	2
13	India Cements Ltd	Cement	Cement	697 million	4
14	ITC Ltd	Tobacco	Cigarettes	6.9 billion	4
15	JSW Steel Ltd	Ferrous metals	Steel	9.9 billion	2
16	Kansai Nerolac Paints Ltd	Building materials	Paints & varnishes	707 million	3
17	Larsen & Toubro Ltd	Construction	Construction & engineering	19 billion	4
18	Lypsa Gems and Jewellery Ltd	Gems and jewellery	Diamond cutting and jewellery	26 million	2
19	Mahindra & Mahindra Ltd	Automotive	Cars, utility vehicles, commercial vehicles	12 billion	3

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
20	Mangalore Chemicals & Fertilizers Ltd	Fertilizers	Fertilizers	364 million	1
21	Maruti Suzuki India Ltd	Automotive	Cars, utility vehicles, commercial vehicles	10 billion	3
22	Motherson Sumi Systems Ltd	Auto ancillaries	Electrical auto parts	8.5 billion	3
23	MRF Ltd	Tyres	Tyres & tubes	2.2 billion	3
24	NTPC Ltd	Power	Power Generation	15 billion	2
25	Oil and Natural Gas Corporation Ltd	Gas & petroleum	Oil drilling and petroleum	54 billion	2
26	Orient Electric Ltd	Consumer durables	Electronics/electricals	275 million	3
27	PC Jewellers Ltd	Gems & jewellery	Jewellery retail	705 million	4
28	Pidilite Industries Ltd	Diversified	Chemicals and adhesives	993 million	3
29	Power Grid Corporation of India Ltd	Power	Power transmission	5.1 billion	2
30	Ramco Cements Ltd	Cement	Cement	723 million	4

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
31	Raymond Ltd	Textiles	Textiles - woollen and worsted	442 million	1
32	Reliance Industries Ltd.	Diversified	Petrochemicals, energy, telecom	81 billion	2
33	Ruchi Soya Industries Ltd	Agro-processing	Edible oil & solvents	1.7 billion	1/2
34	Shalimar Paints Ltd.	Building material	Paints & varnishes	46 million	3
35	Shree Renuka Sugars	Sugar	Sugar	659 million	1
36	Southern Petrochemical Industries Corporation Ltd	Fertilizers	Fertilizers	278 million	1
37	Star Cement Ltd	Cement	Cement	249 million	4
38	Sun Pharmaceutical Industries Ltd	Pharmaceuticals	Drugs & pharma	4.4 billion	1
39	Tasty Bite Eatables Ltd	FMCG	Food & beverages	60 million	2
40	Tata Motors Ltd	Automotive	Cars, utility vehicles, commercial vehicles	35 billion	3

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
41	Tata Steel Ltd	Metals - ferrous	Steel	19 billion	2
42	Torrent Power Ltd	Power	Power generation, transmission and distribution	1.8 billion	2
43	TVS Motor Company Ltd	Automotive	Auto - 2 & 3 wheelers	2.5 billion	3
44	UltraTech Cement Ltd	Cement	Cement	5.7 billion	4
PRIMARY COUNTRY OF OPERATIONS: BANGLADESH					
1	Beximco	Diversified	Textiles and garments	23.40 million	1/4
2	Hamid Fabrics	Fashion	Fabrics and fashion clothing	18.87 million	4
3	Pran Agricultural Marketing Co	Food processing	Packaged beverages	3.5 million	1
4	Saiham Cotton Mills	Textiles and fabrics	Cotton yarn	3.5 million	4
5	Shinepukur Ceramics	Ceramics	Porcelain and bone China	1.3 million	4
6	Square Pharma	Pharmaceuticals	Drugs & pharma	62 million	1

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
PRIMARY COUNTRY OF OPERATIONS: BRAZIL					
1	Springs Global Participações S.A.	Textiles and fabrics	Textiles and home furnishings	4.6 million	2
2	Iochpe-Maxion	Automobile	Wheels, side rails, cross members, frames, castings, etc.	50 million	3
PRIMARY COUNTRY OF OPERATIONS: INDONESIA					
1	Astra Agro	Food processing	Palm oil	128 million	1
2	Pt Sri Rejeki Isman Tbk	Fashion	Textiles, fabrics and garments	11.8 million	1 / 4
3	Astra Otoparts	Automobile	Spare parts - OEM and REM	81 million	3
PRIMARY COUNTRY OF OPERATIONS: PHILIPPINES					
1	Philex Mining	Mining	Gold and copper mining	25.3 million	4
2	San Miguel Food and Beverage Inc.	Food processing	Food and beverages (alcoholic)	5.7 billion	4

Sr. No.	Name of the firm	Industry of operation	Key product/ service	Annual revenue (in USD)	Cluster
3	Eagle Cement	Fashion	Textiles, fabrics and garments	288 million	4
PRIMARY COUNTRY OF OPERATIONS: SOUTH AFRICA					
1	Distell	Food processing	Beverages (alcoholic)	1.5 billion	4
2	Kaap Agri Ltd	Diversified	Inputs to agri producers	600 million	1
3	PPC Ltd	Cement	Cement	716 million	4
PRIMARY COUNTRY OF OPERATIONS: THAILAND					
1	Asia Fiber P. Ltd	Artificial fibres	Nylon yarn and other products	18 million	4 / 1
2	NR Instant Produce Public Company Ltd	Food processing	Inputs to agri producers	44 million	2
3	Khon Kaen Sugar Industry Public Company Ltd	Sugar	Sugar	377 million	1

Table 2: Sample quotes from data analysis

Codes	Sample Quotes
Operational Aspects	
• Immediate Responses	
○ Health & Safety	
▪ Follow safety protocols	All safety protocols of temperature sensing, wearing of safety gears (masks, goggles and face shields), social distancing, sanitizing and washing hands are being adhered to stringently.
▪ Helplines and response teams	To ensure business continuity and swift response to any situation, a “Rapid response team” has been formed across business units, and functions.
• Technology Adoption	
○ Factory automation	On the operations front, the Company issued guidelines and protocols for carrying out operations and maintenance of its units and ensured that there was no adverse impact on the availability of its transmission system. This could be achieved through enhanced use of automation and digital solutions.
○ Enabling work from home	implemented complete Work-from-Home (WFH) solutions which were tested and enhanced during the Covid-19 crisis. The entire employee base adopted and adapted to this in double-quick time. This was the initiation of moving to a complete digital workplace.
Strategy	
• Innovations in products and services	Through the ingenuity of our engineers, we have also developed a first-responder mobile ambulance that will be in service in the rural areas
○ Co-creation of products	Further, joint development of machines with the client, along with service opportunities, are being explored.
• Physical to digital	Hero is also working on evolving other interesting, related business models, such as one in the two-wheeler rental space as an additional opportunity.
Supply Chain	
• Suppliers	
○ Extending credit to Suppliers and ensuring liquidity	Sudden halt of the business with the start of the lockdown put significant pressure on cash flows of some business partners like suppliers and dealers. The Company provided them with cash flow support to ensure that they are able to pay salaries to their employees and meet other obligations.

Value Chain	
○ Financial Management	
▪ Availing government grants, seeking extensions on dues	In regard to dues to Governments, the Company has sought extension on account of COVID-19 lockdown in relation to the below mentioned sales tax deferral dues which has since been paid
○ Operations	
▪ Halted production during lockdown	All cigarette manufacturing facilities of your Company as well as the contract-manufacturers of cigarettes had to shut down operations during the last week of March 2020.

Table 3: Summarizing the key aspects in the ontological framework

Elements	Definition	Description in the C-19 Context	Examples
Strategy			
New Business Models	Business model is an ‘abstract representation of an organization, be it conceptual, textual, and/or graphical, of all interrelated architectural, co-operational, and financial arrangements designed and developed by an organization, as well as all products and/or services the organization offers based on these arrangements that are needed to achieve its strategic goals and objectives.’ (Al-Debei et al., 2008, p. 7).	It included two types – opportunity-driven and necessity-driven business models. In the case of opportunity-driven new business models, firms viewed C-19 as an emerging opportunity to enact new ways of doing business. In the case of the necessity-driven business models, they had to be changed to survive.	Opportunity-driven business models: Digital delivery players in the restaurant delivery business, linking up with FMCG firms to enable last mile delivery of daily use goods. Necessity-driven new business models: instances include firms in the textile industry venturing into mask making, among others – given that their primary businesses did not have much demand.
Business Model Transformation	Introducing changes to how the organization delivers value to its customers by transforming elements such as people, process and technology. It is based on new strategic pivots.	Given the systemic impact of C-19, some organizations had to introduce fundamental changes in their business models to survive.	For instance, demand for products from firms producing theatre screens was near to zero, and they ventured into producing screens for isolation wards.
Advocacy	The mobilization of political, regulatory and other types of support through deliberate techniques of social suasion (Lawrence and Suddaby, 2006).	C-19 caused governments to respond in an ad hoc manner to support business operations. While some businesses were probably required to operate, the government may not have perceived them as essential at that point. This required those businesses to lobby with the	Examples included fast tracking approvals for those industries that were not traditionally perceived as contributing to the production of medical equipment.

Elements	Definition	Description in the C-19 Context	Examples
		government to be able to continue operating.	
Business Agility	Ability of a business to swiftly make internal and external changes in response to a changing environment.	The disruptions caused by the pandemic necessitated swift actions on the part of firms to correct operational disturbances and infuse strategic imperatives.	When supply chains were disrupted, firms attempted to obtain greater visibility into their upstream supply chains to exercise greater control and work on 'just-in-case' conditions.
Digitalization	Digitalization is the exploitation of digital technologies to create new business models or enact new ways of creating and delivering value (Rachinger et al., 2019).	While digitalization in traditional industrial firms was initially low, the pandemic accelerated the process.	Smart packaging enabled consumers to track the food they received and hence ascertain its hygiene.
Approaches			
Immediate Operational Responses	Refers to the expeditious responses by organizations to modify the status quo in operations.	C-19 mandated changes in the way firms operated, given the systemic impact.	Included devising of safety protocols, drafting communicating strategies, providing social and community service, among others.
Frugal Innovations	'Encompass (re)designing products, services, systems, and business models in order to reduce complexity and total lifecycle costs, and enhance functionality, while providing high user value and affordable solutions for	Resource constraints are natural fallouts of the pandemic. It required firms to do more with less by innovating its products or processes.	Using retrofitted motorbikes as ambulances to bring patients from remote regions to hospitals in the absence of four-wheeler ambulances.

Elements	Definition	Description in the C-19 Context	Examples
	relatively low-income customers' (Leliveld and Knorringa, 2018, p. 1).		
Servitization	Refers to industrial products that are packaged as services that deliver customer value over a period of time rather than just at the time of purchase (Mastrogiacomio et al., 2020).	Many industrial products require constant support services such as maintenance and repair which are usually readily available. The pandemic necessitated the primary product creators to encapsulate these services.	Motor vehicle firms provided services on wheels to enable customers to obtain their vehicles at their doorsteps.
Activities			
Value Chain	'It disaggregates a firm into its strategically relevant activities in order to understand the behaviour of costs and the existing and potential sources of differentiation' (Porter, 2000, p. 50).	Value chain activities required process changes to follow the new normal.	Use of virtual planning tools, remote monitoring of operations and other techniques to support value chain processes.
Supply Chain	'Set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer' (Mentzer et al., 2001, p. 4).	Supply chain players in the emerging market context are dominated by MSMEs that faced working capital issues during the pandemic.	MNCs lent a helping hand by extending credit and helping them with technological know-how.

Elements	Definition	Description in the C-19 Context	Examples
Solution Networks	‘Offerings that integrate product and/or service components provided by multiple actors to meet the needs of a specific customer or type of customer’ (Jaakkola and Hakanen, 2013).	With gaps emerging in the competencies of individual firms, firms with complementary capabilities pooled in resources to deliver value.	Partnerships between organizations to develop equipment such as ventilators, spray guns and oil free compressors.
Output			
Resilience	Resilience in this context refers to the ability of the organization to be flexible to new external pressures and function despite the presence of modest resources during contingency situations like C-19 (Bhamra et al., 2011).	In the context of the pandemic, firms had to stretch their capacities and make do with whatever was available.	Use of scenario planning and risk assessment tools to pre-empt disruptive situations and plan ahead to address these situations.
Safety	Safety is the ability of the organization to provide a guarded and secure environment in the organization where employees can be productive in their work (Caligiuri et al., 2020).	C-19 necessitated organizations to provide social distancing protocols and other measures for its employees.	Examples included the provision of work from home options, creation of task pods to create contained units on the shop floor.

Outcome			
Business Continuity management	Refers to the identification of ‘an organisation’s exposure to internal and external threats and synthesises hard and soft assets to provide effective prevention and recovery’ (Herbane et al., 2004, p. 435).	It involved industrial firms’ efforts to ensure that a part or the entirety of their business functions continue to run despite the resource constraints imposed by C-19.	Instances include process re-design, work schedule staggering, etc. to enable employees to work on the shop floor and keep the production moving.

Source: Authors’ elaboration



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